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AMERICAN BEE JOURNAL

FEBRUARY, 1920



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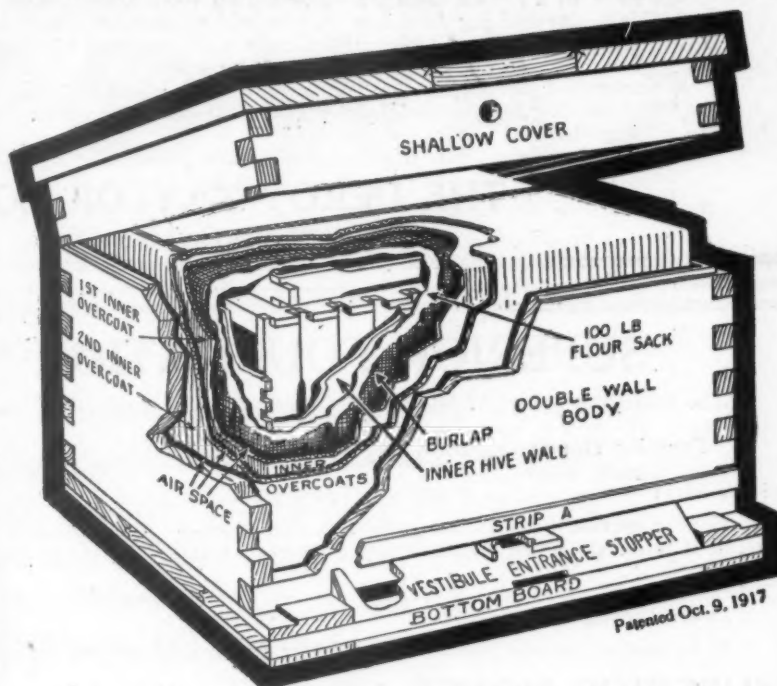
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3. Zinc queen excluders brushed to remove rough edges; no "steel strike" delay on these boards.
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VOL. LX—NO. 2

HAMILTON, ILL., FEBRUARY, 1920

MONTHLY, \$1.00 A YEAR

SECURING COMBS OF WORKER CELLS

An Explanation of the Failure of Getting Well-Drawn Combs With Requisites for a Maximum of Worker Cells from Foundation

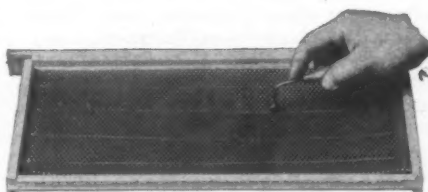
By M. G. Dadant

ONE question much agitated at present is that of large vs. small hives, and one of the demands for the large hive comes from the fact that it will ensure, for the most prolific queen, ample breeding room.

But are we even using the hives we have at present, as the regular Langstroth ten-frame hive, to the advantage we might? We are not. At least there are many beekeepers whose colonies are restricted to possibly three-fourths their size by the large amount of drone comb in the hives.

In the early days, when foundation was first introduced, its appeal lay in the fact that it would insure straight combs; a secondary consideration was that it would eliminate drone comb by the use of full sheets, and a third, that it would save much work to the bees in the production of wax if used in full sheets.

The first of these considerations was promptly adopted, the third is fast replacing the starter with the full sheet of foundation. But the second consideration, that of minimum



The Gates imbedder should replace the usual spur.

drone comb, has not received the attention it should have.

A questionnaire to several prominent beekeepers brings the reply that they secure perfect, or nearly perfect, combs from full sheets of foundation, and one, Mr. N. E. France, states that if this is not secured the fault lies with the beekeeper, and not with his materials, even as in the earlier days, before comb-foundation was used, the successful apiarist got maximum worker comb by going over all his combs, cutting out the drone cells and replacing the same with worker cells, whereas the less careful left the combs as built by the bees.

The object of this article is to give

some reasons for failure to secure perfect combs and some points on proper procedure in effecting the desired end.

The Foundation

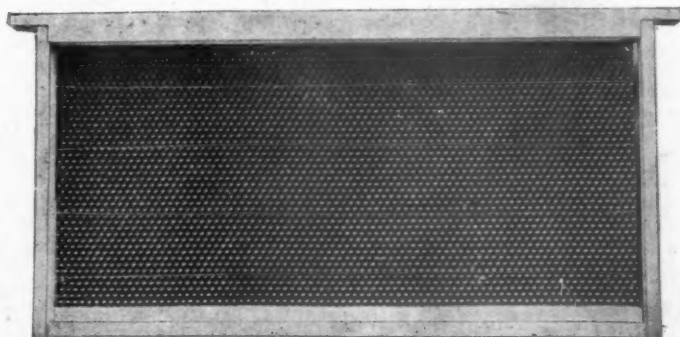
The foundation, in the first place, should be as perfectly made as is possible. There should be no stretched cells through improper manufacture. Fortunately, this has been practically eliminated by modern methods of manufacture. Virtually all foundation on the market is free from this defect.

But there is too much tendency today to replace the heavier foundation weighing one pound for six or seven sheets, with that running nine or ten sheets to the pound. Messrs. Jacquays and Bartlett, of Michigan, have in the past few years drawn out many thousands of combs on different weight foundation. They have had very little trouble with that running seven sheets to the pound and very much with the lighter grades. Six sheets to the pound would be even better. E. L. Hoffman, of Minnesota, is of the same opinion.

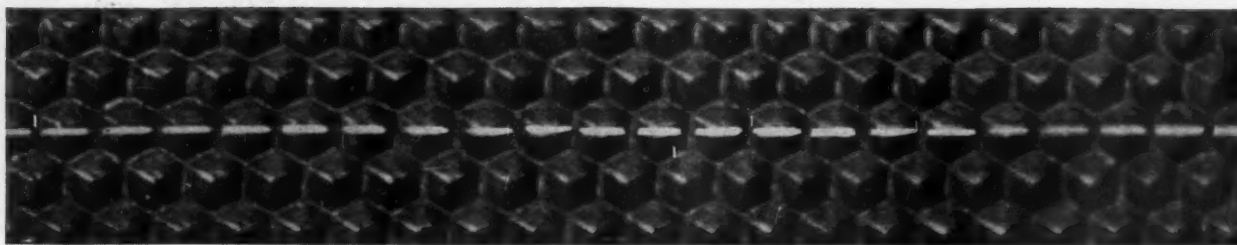
N. E. France, among others, has had success by painting the upper half of each sheet of foundation with hot wax after the plan of H. Vogeler. Nearly all stretching comes in the upper half of the sheet, and this stiff congealed wax helps prevent it.

Wiring the Frames

Without exception, wiring of frames is considered necessary. At different times, both vertical and horizontal wiring have been recommended. The vertical wiring is much more difficult, on account of the heavy top-bar and narrow, thin bottom-bar. Moreover, the foundation has a tendency to "buckle" between such vertical wires in the hands of



The usual method of wiring is to have four wires spaced equally distant on the frame.



The electric imbedder cements the wire into the foundation so that it is removed with difficulty.

any not expert with this mode of wiring.

Edward G. Brown, of Iowa, uses vertical wires with diagonal wires in addition, and has no trouble. However, no more than four horizontal wires are needed, if properly placed and properly put in.

The first wire should be very close to the top-bar, probably half an inch from it, the second probably one inch below this, the third an inch or so farther down, with the fourth wire wherever the beekeeper desires, so that it may prevent side shake of the sheet and otherwise do the most good.

In times past, slack or loose wires have been advocated by some. They are, at the best, bad practice. Have your wires taut, and imbed your foundation soon after wiring. Otherwise they may cut into the side bars and loosen, necessitating re-tightening before using.

Wiring devices on the market today make for ease in such wiring. There is no excuse for the many slipshod manners of introducing foundation without wires or with one or two wires improperly fastened, run in loose or so fastened as to make the foundation buckle.

Doctor Miller, many years ago, became dissatisfied with ordinary frame wiring, and has used with success the "foundation splints." They are of sufficient importance to warrant a short description and method of use as given by him in the American Bee Journal.

"The splints, or little sticks, are one-sixteenth in. square, and one-eighth in. shorter than the depth of the frame, inside measure. The paraphernalia needed to do the work are: A pair of pliers to lift the sticks out of the melted wax, a board to use as a presser, one-quarter in. shorter than the inside depth of the frame, or 3 or 4 inches wide and one-quarter or three-eighths inch thick, with one edge kept well soaked in water, so the wax will not stick to it, and a board seven-eighths inch thick, just large enough to slip loosely inside the frame, having strips nailed on the sides as stops so that the foundation will rest on the board while the frame rests on the stops. Put a bunch of the sticks in the heated wax. They will froth up at first because of the air and moisture in the wood. In a little while that will be cooked out and the wax will settle down clear. Then, with the pliers lift a stick out of the wax and lay it on the foundation, and with the wet edge of the presser

press it into the foundation. Being hot it will melt its way into the foundation, and if pressed too hard or too long, may cut the foundation in two. A little experience will enable you to do it right. It is perhaps well to heat the wax but little more than enough to keep it melted, for if too hot there will not be so good a coating of wax on it, and if you use a stick not coated with wax at all the bees will dig out the stick. The sticks are put perpendicularly, one about an inch from each end, one in the middle and one on each side of the middle one, half way between it and the end one."

But the beekeeper is apt to consider this method too long, and the added objection has been raised that where not done perfectly such method may produce "wavy" combs.

Fastening the Foundation

Some few urge that foundation should not be fastened to the top-bar. We do not agree. If properly supported by the wires, fastening to the top-bar will be an added support.

But it is imperative that wires be properly fastened to give best results. The spur wire imbedder is a very poor makeshift. It presses the wires into the foundation but does not perfectly imbed them. The wire cuts through the cell walls of the foundation in one line; the spur points damage the walls in two other lines, making for a greater weakening of the foundation.

Electrically imbedded wires are best. The wires should be heated just to the point where they will sink in to the midrib of the foundation and not cut through, while the melted wax will congeal over the wires in the cell walls and "cement" them perfectly.

For the smaller beekeeper the instrument brought forward by Burton N. Gates and A. C. Miller is desirable. It is a small tool with a metal point made with a groove to fit over the wire. This tool is heated and melts and presses the wire into the foundation. Unfortunately, this tool is not on the general market.

Drawing Out the Combs

Granted that we have the proper foundation well fastened in good frames wired in an approved manner, we still have a slight chance for sagging if such frames are not introduced in a desirable place in the hive.

Never give full frames of foundation to a new swarm. The heat of the mass of the bees, together with their weight is too great a strain to put unnecessarily on the new comb.

The very best place to have these

combs drawn out is over the brood chamber, without excluder between. This not only does away with sagging but insures comb being built to the bottom-bar perfectly.

They may be placed below in the brood chamber if the Demaree plan is used, putting all but one frame of brood in the super above. This relieves the foundation of the bulk of the weight of the bees and of much of their heat.

Such combs are also best built out in a light flow rather than in a heavy one.

Conclusions

Get well-made frames, put your wires in tightly with most of them close to the top-bar, use heavy foundation, not more than seven sheets to the pound. Imbed the wires by a hot tool or by electricity, with the foundation well fastened to the top-bar. Introduce the frames in the super of your colonies, preferably in the center of the super, during a light honey flow, and you will have a maximum of worker comb.

Producing Perfect Combs From Foundation

By G. C. Greiner

DURING the last 12 or 15 years, since beekeepers have found out that the use of foundation is one of the best paying outlays in the production of surplus honey, I have not used a frame in my hives without a full sheet of worker-foundation. Consequently I have practically not a comb in use that is not in every way perfect. Of course, it requires a little experience to become familiar with the peculiar points of its nature. When I first began to use it I made some blunders, that resulted in more or less undesirable combs but with a little experimenting and observation I soon found ways to avoid them, and today I would have to look some time to find a really bad comb among my outfit. And it is not only in the brood-chamber where perfect worker-combs are desirable, but they are of as much importance in the extracting super as anywhere else.

The main point in producing perfect combs (stretching next to the top-bar is one of the most annoying faults to be avoided) is the use of the right material and the proper wiring of the frames. At the beginning of my foundation experience I used, for economy's sake (?) light brood foundation only, which gave me many buckled,

undesirable combs. The next season I tried the heavier kind, the medium, and to compare the results under like conditions, I used both kinds side by side. The advantages of the heavier grade were so strikingly plain that I have used no other since.

At about the same time, when my experience with foundation was still in its infancy, I committed another great blunder. Trying to do something extra nice, to have combs solidly attached to sides and bottom-bars, I fitted the sheets into the frames without allowing sufficient space for stretching. I hardly need to tell that I practically spoiled a season's supply of foundation; almost every comb was a disgrace to any well-kept apiary. To allow for stretching, the inserted sheet of foundation should have one-quarter inch space at the sides and from one-half to three-quarters at the bottom.

Another mistake I made in wiring the frames. Years ago, when I was looking for instructions along this line, I found among our bee literature the advice to string the wires quite loosely; if strung too tightly it would cause buckling. Although I could see no reason why this should be so, I tried to reap some benefit from the experience of others and wired my frames accordingly, including the fourth wire near the top-bar.

For a number of years I was annoyed, the same as we hear others complain, with one or two inches of stretched, oblong cells, unsuitable for brood, next to the top-bar. To overcome this trouble I changed my method of wiring; instead of using No. 30 wire, I used No. 28, and then gave them all the tension the wire would bear, even at the risk of breaking one now and then. This settled the wire into the end-bars all it ever would or could, and sprung them perceptibly towards the inside of the frame. The reaction of their spring acted as an automatic wire-stretcher, keeping them tight under common climatic changes and supporting the foundation while being drawn out. I am not positively sure that tightening the wires was the only means of preventing the stretching of the cells next to the top-bars, but as I have very little trouble with oblong cells of late years it may have something to do with it.

Another change I made in wiring was leaving off the top wire. Outside of being less work to string three instead of four wires, I could see no necessity for having a wire so near to the top-bar. What makes foundation stretch above is the weight below. I do not remember ever having seen oblong cells when using narrow starters. If that top wire was added at proper distances to the lower ones, to help support the weight of foundation with its adhering bees I believe it would do more good towards preventing oblong cells than when placed near the top-bar. The main object of the wires is to keep the foundation in the center of the frames; being securely attached to the top-bar in that

position, a wire so near to it seems to be of little consequence.

The time of filling the frames with foundation may also have some bearing on keeping the foundation from excessive stretching. I always defer this part of my bee work as long as I can, or until warm weather sets in; it is then in better condition to be handled than during the winter. On really hot days, which are my advice for this job, in a sweltering honey-house with the thermometer at 90 or 100 degrees F., foundation will stretch as much as it ever will by the heat of the hive (unless it is an overpopulous colony, and to such foundation should not be given), and if fastened into the frame in that condition it may have a tendency to retain the normal shape of the cells with little or no stretching. Incidentally imbedding the wires is greatly facilitated under these conditions, especially if the spur-imbedder has to be used. Although I now use electricity for this purpose the spur-imbedder, when properly used, will give good satisfaction. I had no other for many years.

It is not a bad idea to always keep a few drawn combs as a reserve; they come very handy when needed. I have them drawn out whenever a good opportunity offers itself, either between evenly drawn and capped combs of honey in the supers, or in colonies that refuse to do their share in super work; it compels them to do a little something for their owner.

In summing up the foregoing I would caution every reader not to take too much stock in any of my assertions. I merely give my experience of past years with its results obtained. Conditions vary so much with different individuals that I cannot guarantee success to others; each one must work out his or her own salvation.

La Salle, N. Y.

Another Short Course

Doctor Phillips and his staff will conduct a short course in beekeeping at the University Farm, St. Paul, Minn., during the week of February 16 to 21.

Combs Spoiled by Stretching—How to Avoid It

By Morley Pettit.

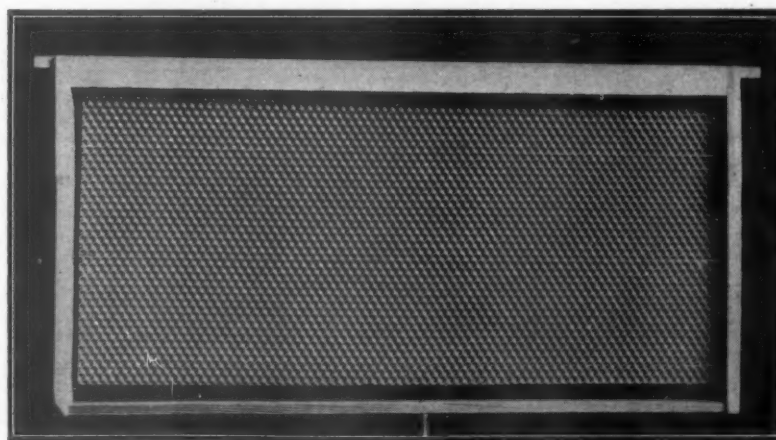
CORRESPONDENT writes:

"As you know, frames wired horizontally have one to two inches of comb at the top unsuitable for brood, and a remedy for this serious defect is one of the crying needs at present."

There is no doubt that this is a common fault of combs built on full sheets of foundation, and it is a serious one. It reduces by that much a breeding space which many consider already too small in the 10-frame Langstroth hive. It also makes a constant barrier of honey between the brood and supers, forming one of the chief talking points of the advocates of divisible brood-chambers. Furthermore, it is a needless handicap on the business, for by a better understanding and a closer application of the principles of comb-building the condition may be entirely avoided. It all depends on the support given to the foundation both during and after building. This, in common practice, may be wires in the foundation, and the shells left by a few generations of brood in the comb. Once the latter stage is safely reached there is not much danger of further stretching.

To begin with, the stock Langstroth frame is without wire where wire is most needed—near the top. Then, if a sufficient number of wires in the right place and well stretched are properly embedded, the foundation is better *not* to be fastened to the top-bar at all. A few years ago the most authoritative teaching in America was that wires should be slack to allow for the stretching of the foundation. This at one stroke did away with any benefit the wires might be. The poor foundation was like the elephant's nose in one of Rudyard Kipling's animal stories. He was relating how the elephant originally got its trunk. Some other animal grabbed it by the nose and pulled it until it stretched out long. It finally exclaimed, "That's too buch for be."

It has been generally taught that



The best wiring is to have the two top wires close to the top of the frame

wires are used mainly to prevent the breaking of combs in extracting and in moving bees. Experience has shown me that they are of minor importance in the extractor, for if the comb-baskets are not well braced, wires will not save the combs, and if they are, wires are not necessary. It is entirely up to the manufacturer of the extractor. Wires will help prevent breakage of combs in moving, but the shells left by two or three generations of brood are worth more. I have used thousands of combs without wire in all parts of the hive, and for most kinds of migrating, and can say from wide experience that the main and perhaps only advantage of wires is to hold the comb in shape until it can be used at least once for brood.

It may be that the metal comb is the answer to this hard and very important question. Aside from that some system of wiring seems the most practical way of bringing the young comb through formative stages to a safe maturity, after which it may hope for a long and useful life, barring accidents and disease.

Vertical wiring looks good from the one standpoint, and has some strong advocates who are able to show beautiful combs. It has the objection of being different from what we are accustomed to and of requiring a heavier bottom-bar, or some system of reinforcement. Other devices, like Dr. Miller's splints, probably require more skill than the commercial beekeeper can expect from his helpers.

In the Pettit apiaries a special frame has long been used with the greatest of satisfaction. The top-bar is plain on all sides and only five-eighths inch deep. As no groove is used and the light top-bar has sufficient strength, the extra space is saved for comb. On the under side a small staple is driven in the middle before the frames are nailed up. The horizontal wires are placed closer together near the top than in the stock frame, and an extra wire comes just one-quarter inch below the top-bar being threaded through said staple for middle support. All wires are carefully strung as taut as can be without cutting into the wood. When foundation is put into the frame every wire is carefully embedded from end to end. If any wire happens to be slack in the frame it is sprung down in the middle,

hammock-shaped, and carefully to avoid stretching of the foundation from slackness on the one hand, and buckling from too much tension on the other. The foundation is not fastened to the top-bar in any way. The bees make that their first duty.

Now what happens when the heat and weight of bees come on the foundation in the hive? As there is clearance between each sheet and its bottom-bar, the whole sheet may spring down slightly under the added weight of clustering bees. This does not cause stretching tension in any part as all wires can give slightly and to about the same extent. No rigid top-bar fastening has it by the nose. One, or possibly two rows of distorted cells may be built next to the top-bar, but that is all. The sheet of foundation is drawn out with cells quite as perfect as the manufacturer made them.

We believe that this system of wiring without fastening foundation to the top-bar gives a much higher standard of combs than the stock frame. But to our way of thinking the advantage does not stop there. In fact in designing the frame it was of secondary consideration. Having no groove and wedge to fuss with we can put in foundation twice as fast, and that is a job for the busy season. When foundation in frames has to be carried over winter, frost usually breaks it loose from the top-bars, or when supers of wired foundation have to be carried to outyards vibration often breaks it. This never happens in our case as it is loose from the top-bar already and the spring of the wires takes up the vibration. Even if we did not get better combs we would much prefer our system of putting foundation into frames. While acting as Provincial Apiarist I sent sets of these frames out to a number of Ontario beekeepers as one of a series of co-operative experiments and they were very favorably received.

But do not let the beekeeper fondly think his new combs are out of danger when all cells are safely built to normal length. The common practice of spreading combs in the extracting super, leaving it eight or nine instead of ten, is a fruitful source of stretched comb. Especially when they are new, the undue weight of honey this treatment requires them to carry, while also subjected to the weakening ef-

fect of extreme heat which usually prevails during a good flow, often causes the best wired combs to sag out of shape and be completely spoiled for brood chamber use.

From the stand point of getting good combs, another important point is to never place or leave foundation in a hive except during a good honey flow, and **never place foundation in a broodchamber.** The former statement will be generally accepted, the latter may cause exclamation. I refer to the space which is so commonly found vacant or filled with drone comb next the bottombar. Combs built on foundation cut the right size and placed in supers under right conditions do not have this objectionable feature. It is probably caused by light or cool air or both coming in at the entrance. These improperly admitted will cause combs to be cut away; but that is another story.

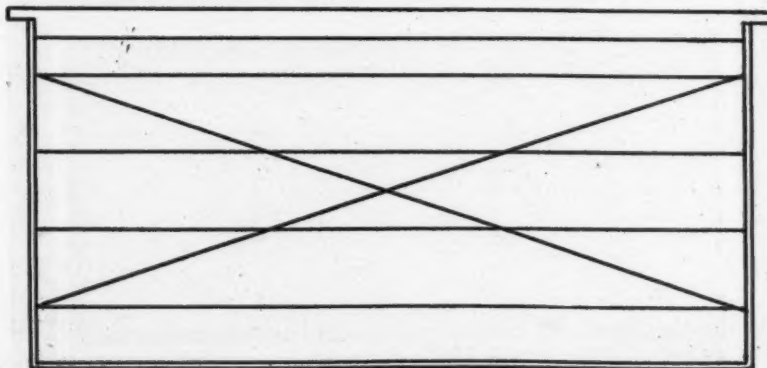
In conclusion then, the remedy for stretched combs is a proper system of wiring whereby all parts of the sheet are adequately supported. We think best not to fasten it to the top-bar. Then avoid overloading new combs and if at all convenient have a few generations of brood reared in them under conditions whereby the cells would be used right to the top-bar. Finally use a rule graduated to show the size worker cells ought to be on the surface of every comb and reject from broodchamber use all which have more than two or three rows of spoiled cells, except that a total of drone comb equal to about one-half a Langstroth comb might be allowed in a broodchamber. Ontario.

New National Organization

As a result of the resolution passed at the Chicago convention of the National Beekeepers' Association at the 1919 session, calling for a conference of delegates for the purpose of formulating a plan of operation and adopting a constitution for a national organization of honey producers, a group of representative men met at Kansas City on January 6.

The following States and organizations were represented:

Prof. George H. Rhea, of Ithaca, N. Y., representing New York and Rhode Island. B. F. Kindig, of East Lansing, Mich., State Apiarist of Michigan, and President of the National Beekeepers' Association. Colin P. Campbell, Grand Rapids, Mich., representing the Michigan Beekeepers' Association. Clifford Muth, of Cincinnati, Ohio, representing Fred W. Muth & Co. Jesse D. Warren, Medina, Ohio, representing A. I. Root Co. E. S. Miller, of Valparaiso, Ind., President of the Chicago Northwestern Beekeepers' Association. F. J. Rettig, of Wabash, Ind., representing the Indiana Beekeepers' Association. Dr. A. C. Baxter, of Springfield, Ill., President of Illinois State Beekeepers' Association. L. C. Dadant, of Hamilton, Ill., representing Dadant & Sons, Hamilton, Ill. H. L. McMurtry, Chief Apiary Inspector of Wisconsin, representing the State



The Brown system of wiring has proven successful, though it means much more work.

Department of Agriculture, Marion, Wis. Prof. F. B. Paddock, of Ames, Iowa, State Apiarist of Iowa, representing the Iowa Beekeeper's Association. E. E. Tyler, Columbia, Mo., President, and J. F. Diemer, Liberty, Mo., Secretary, and W. L. Wiley, Brunswick, Mo., of Missouri Beekeepers' Association. W. C. Collier, of Goliad, Texas, President, and E. G. LeSturgeon, of San Antonio, Texas, Manager of the Texas Honey Producers' Association. Dr. J. H. Merrill, Manhattan, Kans., State Apiarist, and Joseph A. Reinecke, Seneca, Kans., representing the Kansas Beekeepers' Association. Frank G. O'Dell, Omaha, Nebr., Director of Research, Capper's Weekly. C. B. Baxter, Leavenworth, Kans. R. W. Hardy, Nebraska, President Honey Producers' Association. A. E. Shellhorn, Billings, Mont., Vice President Montana Beekeepers' Association. Frank B. Terriberry, State Inspector of Apiaries, Salt Lake City, Utah. Frank Rauchfuss, Denver, Colo., Secretary Colorado Honey Producers' Association. Wesley Foster, Boulder, Colo., and Mrs. Cora D. Polhemus, Lamar, Colo., Director National Beekeepers' Association, of the Colorado State Beekeepers' Association. J. B. Ramage, Yakima, Wash., President Washington State Beekeepers' Association. C. B. Justice, Los Angeles, Calif., Manager California Honey Producers' Exchange. Chas. D. Mize, Mt. Hope, Kans., President Kansas Beekeepers' Association.

It was decided to organize an entirely new association, since there has been much dissatisfaction with the present National and its policies. The name of the new organization will be American Honey Producers' League. The plan of operation as agreed upon is entirely different from any similar organization. A point of particular interest lies in the fact that while teachers of beekeeping, State officials and dealers in bee supplies are admitted as members of the association, they are not permitted to vote. Control of the policies of the association are thus retained in the hands of the producers.

The policy of the organization will be to foster the development of the industry in every possible way, including the securing of uniform inspection laws, better marketing facilities, more liberal appropriations for educational work, legal protection for the beekeeper, standardization of supplies and a liberal amount of research work on the problems of the beekeeper in the various State institutions.

Since so many important beekeeping organizations were represented and the new plan avoids most of the things which aroused so much antagonism to former associations, it is confidently expected that the foundation has been laid for a new and powerful organization which will be able to do much for the industry. The organization was completed after a free and full discussion on the part of the delegates and the fullest

agreement as to details. The following officers were elected:

President, E. G. LeSturgeon, San Antonio, Texas.

Vice President, George H. Rea, Ithaca, N. Y.

Secretary-Treasurer, Chas. B. Justice, Los Angeles, Cal.

Executive Committee — Frank Rauchfuss, Denver, Colo.; F. B. Paddock, Ames, Iowa; E. S. Miller, Valparaiso, Ind.

The constitution in full will appear in a later issue.

Tulip-Tree or "Tulip-Poplar," as a Vernacular Name

By John H. Lovell

AN important honey plant throughout the Appalachian hardwood forest region is the tulip-tree (*Liriodendron tulipifera*). A very common vernacular name in use for this species is "tulip-poplar," which is most objectionable from every point of view. The tulip-tree is not a poplar (*Populus*). It not only belongs to a different genus, family and order, but not improbably is derived from an entirely different stock. The name "tulip-poplar" is a misnomer, and it is often misleading in the extreme. Beekeepers not infrequently omit the word tulip and refer to the tulip-tree as poplar, sometimes corrupted into "poplar." There is then no way of distinguishing, except from the context, this species from the true poplar, the species of which are numerous, common, and extend over a large area, inclusive of the tulip-tree. The name "tulip-poplar" should, therefore, be dropped both by our bee journals and beekeepers, and tulip-tree used in its stead. The name tulip-tree is preferable in every way, and there is no possible objection to its use. It is

the name given in all the leading manuals of botany; the reader will look in vain for "tulip-poplar," either in the 7th edition of Gray's Manual or the Illustrated Flora of Britton and Brown.

The ecology of the tulip-tree and the poplars is entirely different. The poplars are wind-pollinated and the flowers are wholly nectarless, while the tulip-tree is insect-pollinated and a valuable honey plant. Hence it is very undesirable that the two genera should be confounded. The advantage of using the name tulip-tree is so clear that it ought to be sufficient to call attention to the above facts. Let "tulip-poplar" drop into deserved oblivion.

Maine.

A Novel Swarm Catcher

The Hayck Brothers at Quincy, Ill., have their apiaries in a hollow between two hills. It is a protected situation surrounded by tall trees. Except for the tendency of swarms to cluster high in the tree tops it is an ideal location.

To overcome the difficulty of hiving swarms which take to the high elevations they have invented a novel swarm catcher, which is shown in the accompanying picture. At the lower end are steel spikes to stick into the ground when in use. A double pole about 25 feet in length can be extended to forty feet by means of a small rope and pulley. A swinging basket at the end holds the swarm. A similar pole with a hook on the end is used to jar the swarm into the basket when it is in place below the cluster of bees. It saves much climbing about to get down swarms and is indispensable to the beekeeper in such a situation who does not practice clipping his queens.



Hyack brothers' adjustable swarm catcher.

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THE EDITOR'S VIEWPOINT

Apiary Insurance in Switzerland

The Bulletin of the Romande Society of Beekeepers in Switzerland gives, in its November number, an account of the operation of the German-Swiss insurance against foulbrood. A detailed translation would be too lengthy, but a few facts will be of interest and may suggest something to our beekeepers.

The mutual insurance against foulbrood in German Switzerland was organized in September, 1907. In 1909, 7,000 members, owners of about 90,000 colonies, paid in indemnities 5,346 francs, or a trifle over \$1,000. In 1918, 13,660 beekeepers, owners of 146,000 colonies, paid 4,104 francs. In ten years the insurance association paid 32,000 francs. The cases of foulbrood treated during that time were about 1,000. The mode of treatment consisted in what we call the starvation method, putting the swarm in an empty box for three days, then hiving it on foundation. The cost of insurance was 5 centimes (one cent) per colony, per year.

The Association received help from the Federal Council through a foulbrood law passed in 1909. It also received scientific help from the Bacteriological Station of Liebefeld, near Berne.

The result was the entire abolition of foulbrood in several of the Cantons. The Association has now a reserve fund of 20,940 francs. It proposes to continue the work.

Of course, Switzerland is a small country, where the apiaries are small and located at short distances from one another. Control of diseases is more feasible than in our country of immense distances. But there is

something enticing in the results obtained. It is worth while for us to ponder over this.

Switzerland is the smallest and the oldest republic. It remained at peace, while surrounded on all sides by warring nations. It can teach them some good lessons.

Good Samaritan Franco-Belgian Fund—Fourth List

Total of former lists	\$407.85
M. H. Pierson, Dale, N. Y.	1.00
W. C. Furnas, Box 4, New Albany, Ind.	2.00
Edwin H. Grafton, 464 Hamilton Ave., Trenton, N. J.	5.00
Geo. E. Moss, Box 308, Souris, Manitoba	1.00
J. Roscoe Miller, 1129 S. First Montrose, Colo.	10.00
J. R. Case, Chico, Calif.	5.00
C. H. Stordock, Davis, Ill.	5.00
G. E. Lemon, Nash, Okla.	1.00
Orange County Beekeepers' Club, Orange Calif.	25.00
G. A. Barbish, La Crescent, Minn.	2.00
C. E. Foss, Alpine, Calif.	5.00
Sergeant W. R. Blackett, Army Building, Omaha.	1.00
C. W. Price, Spirit Lake, Iowa	5.00
Philadelphia Beekeepers' Association, J. R. Rambo, Secy.	10.00
Marcus D. May, Hinesville, Ga.	5.00
F. E. Schriver, R. 3, Grafton, Ohio.	5.00
W. D. Wright, Altamont, N. Y.	10.00
Clyde Mawhinney, Ravena, Neb.	5.00
W. H. Baynes, Salem, Ind.	4.00
Roderick Cameron, Decker Mich.	2.00
Leo Hoffstetter, Prairie City, Ore.	1.00
E. J. Bryant, 710 Walnut Ave.,	

Elgin, Ill.	2.00
J. Mansfield, Elgin, Ill.	1.00
M. Moles, Elgin, Ill.	1.00
M. Salmond, Elgin, Ill.50
A. Bloomfield, Marathon, Ia.	2.50
Miss Annette Ozanneau, Keokuk, Iowa	1.00
Robert Elwell, Rohoboth, Mass.	2.00
W. Muth-Rasmussen, Independence, Calif.	5.00
H. D. Baker, Knappa, Ore.	2.00
Jas. T. Fennell, 3rd and Arch Sts., Philadelphia	5.00
Name not to be published	3.00
Warren M. Fountain, Redding, Calif.	2.50
Fred Hutching, 473 6th Ave., Milwaukee, Wis.	1.00
J. W. Peterson, Box 139, R. 1, Puyallup, Wash.	1.00
E. S. Smith, Westville, Ind.	1.00
W. P. Hainsworth, North Andover, Mass.	1.00
F. X. Arnold, Deer Plain, Ill.	5.00
Total to January 8, 1920	\$554.35

Added to queen subscription:
Jay Smith, Vincennes, Ind. 12 queens
Much more cash should be subscribed to help buy bees in Netherlands.

The following letter was received:

I HEARTILY thank the eminent chief editor for his philanthropic ideas and warm zeal to carry on the Franco-American union by a call for subscriptions in favor of our poor destroyed regions, to rebuild in part the apiaries of northern France and Belgium.

Many years ago, in 1883, when I was just back to the Orient, from service in France, where I had hoped to help recover the lost provinces of Alsace-Lorraine, a beekeeping party assembled at Beyrouth, at the foot of the Lebanon. Most of the members present have been long dead and buried, but Frank Benton was there and brought to our attention American hives and instruments.

"Great streams from little fountains flow;

Great oaks from little acorns grow."

In that assembly of Druses, French, Syrians, Greeks, Germans, Britons and Americans, Americanism was widely sown and American ideas were introduced.

You Americans are great for preparing machinery and supplying it to us Old World people. Everyone remembers that the Italo-Hungarian Hruschka invented the honey extractor. But the Americans are the great makers of extractors. Comb foundation originated in Germany, yet the Dadants, in America, are the leaders in that production. It is the same for all machinery.

The donations which you are now making, of queens, money, hives, etc. in devastated Europe, will propa-

gate American ideas still more, even more than books would do, and will return benefits to you sooner or later.

Tie the French and American stripes still closer together. We gave to you when you were young and we were strong. Now that we are old and worn, the American stars are hovering over the broken-down regions renewing friendship and commercial ties.

Ph. J. BALDENSPERGER,

Nice, France.

Fruit Trees by the Roadside

At the meeting of beekeepers in Nashville, in December last, a very interesting address was given by Major Lloyd C. Stark, of the Stark Bros. Nursery, concerning orchard growing in France. He was in the A. E. F. a long time and took note of different particular methods.

A custom that drew his attention was the immense number of fruit trees lining the highway. He said:

"In many sections of France, fruit trees are used to line all the highways. This is a practice that should be, and some day will be, carried on in our country. Think of the millions of acres now entirely idle that could be producing fruit here in America, if we planted hardy varieties of fruit trees along the state and county roads, to say nothing of the national highways. Many claim that it can't be done satisfactorily in this country, but there is absolutely no argument there. The French do it, and we are just as smart as the French. We have better varieties and as good soil and climatic conditions. Some day we will do it."

Planting of fruit trees along the highways would greatly increase the opportunities for bees to secure both pollen and honey in early spring. The beekeepers should urge it.

Sixty Years in the Field

At the end of the present year, the American Bee Journal will have ended its sixtieth year. Its first issue was in 1861. The Civil War caused it to suspend publication until July, 1866. Six editors have managed it successively: Samuel Wagner, George S. Wagner, W. F. Clarke, Thomas G. Newman, George W. York and the writer of this. From a very obscure pursuit, beekeeping has changed in those sixty years to an occupation recognized as worthy of attention by colleges and other institutions of learning. Previous to the World War, scores of magazines were devoted to beekeeping, which suspended publi-

cation. Slowly but surely they are coming to life again, and we feel safe in predicting that honey production is to become an important branch of agriculture. Why should it not? Food conservation is urgent. Sweets are at a premium and likely to remain valuable, since the extension of prohibition. Honey, being the best and healthiest sweet, is sure of recognition everywhere. It is the only sweet which may be had readily, in large quantities, without cultivation, and while helping seed production and fructification. The future is bright for practical and intelligent beekeepers.

Nosema Disease

We are in receipt of a bulletin of 22 pages on Nosema Apis, from John Rennie D. Sc., and Elsie J. Harvey, of the University of Aberdeen.

The experiences of these scientists practically confirm the views expressed by Dr. G. F. White that this disease does not produce heavy losses in apiaries, though it may occasionally cause the loss of colonies. It has probably no connection with Isle of Wight disease, or the so-called paralysis, though it may exist jointly with either of these diseases in the same colony.

The Economic Entomologists

The apiary section of the American Association of Economic Entomologists met at St. Louis on Wednesday, December 31. It was a notable meeting, in that the officials in charge of beekeeping work in many States were present. Men from New York to Florida and Texas met together with the one purpose of discussing ways and means of elevating the industry of honey production.

Special plans were laid to make next year's meeting one of unusual interest and to eliminate from the program such matters as are discussed at the usual beekeepers' conventions. It is the plan to give place to accounts of research work in beekeeping and matters of special importance in educational and extension work. This organization gives promise of doing much for the beekeeping industry. One thing of immediate interest is the attempt to work out some general plan of inspection work which can be adapted to all States, thus leading to uniform laws. The great drawback to successful work in disease eradication, is that there is no co-operation between the States.

F. B. Paddock, of Iowa, was elected Chairman and G. W. Bentley, of Tennessee, was re-elected Secretary.

National Affairs

The reader will notice the report of the National meeting held at Kansas City January 6 to 8. The importance of it is easily comprehended when one notices how many associations this meeting represented.

Attempts have been made before to organize a national producers' association. In 1903, at the Los Angeles Convention a very positive attempt was made to organize such a body. Two associations only were ready for this move, the Colorado Honey Producers' and the California National Honey Producers. The rest of the country did not yet feel the need of this.

At Minneapolis, in 1911, a very earnest attempt was made to reorganize the National Association on co-operative lines. However, some of the leading men of the association were antagonized, so that there was no united effort. The mass of the beekeepers were also indisposed to spend money on co-operation. Money is the backbone of co-operation. Without it no progress can be made.

The present action, we believe, is a move in the right direction. Several honey producers' associations are thriving in different States and each of them recognizes the necessity of union. Provision has been made for funds sufficient to carry on the work; if the different organizations in the United States support it. If too small a number back it, this time, it will be sure to succeed a little later. It is in the line of progress. Beekeepers cannot afford to neglect that which has proven of benefit to many other lines. A National Association has existed for 50 years. It is time that something be done by it more than discussing natural history or honey production.

Plagiarism

The British Bee Journal, in its December 4 number, copies *verbatim* our translation of L'Apicoltore Moderno's article on "Cryptograms" published in our September number, page 305. This translation cost us some effort. Since it was easier to borrow it from us than to translate it from the Italian, we believe the British Bee Journal should have given us credit for the translation.

SOME TEXAS HONEY PLANTS

Notes on the Sources of Nectar in the Southwest, Where Every Bush Has Thorns and Where Little Honey Comes From Cultivated Crops, Excepting Cotton

By Frank C. Pellett

COTTON is an important honey plant in a large area of Texas, but since we have already devoted a considerable space to the consideration of the cotton plant as a source of nectar (March, 1919 issue), it will be passed over here. To the beekeeper from the North, where the chief sources of surplus are from cultivated crops, such as alfalfa, clover and buckwheat, things seem a little topsy-turvy in Texas, where but little dependence is placed on cultivated crops for honey. Even cotton fails to yield to any marked extent on the light soils south and west of San Antonio. The writer greatly enjoyed several weeks of travel among the beekeepers of the Southwest in 1918 and found it difficult to understand how the beekeeper could make sure of getting his colonies ready for a honey flow that was very uncertain as to its time of arrival. Many of the desert plants bloom at irregular times, depending upon the rainfall, rather than upon the season of the year. In wet seasons they may bloom two or three different times, and short honey flows may be expected at almost any time following a good

rain. One beekeeper in Uvalde County stated that he seldom had a good crop at all his different yards in the same season, as local showers would bring on a good flow at one yard when no honey would be available at a yard a few miles away.

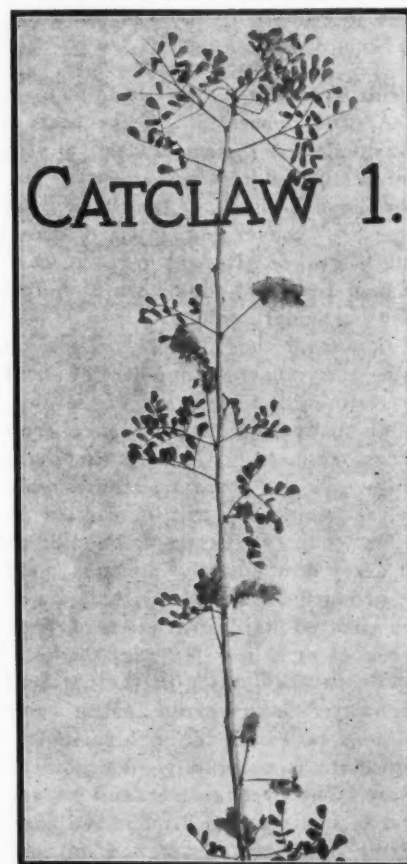
Mesquite

The mesquite is the largest and most important tree on the uplands over hundreds of square miles of country. It ranges from Oklahoma and Texas westward through New Mexico and Arizona to California. The trees have much the appearance of neglected fruit trees, and one may ride for many miles through what would seem at first sight to be a big peach orchard. The trees do not grow close together tall and straight like our forest trees, but scattered about and branching like trees in an orchard.

To the natives of the old Southwest mesquite was extremely important. Cattle and sheep fed freely upon the pods and leaves, while the Indians often ate the pods themselves. The seeds were often ground into a sort of meal, while the trees and stumps furnished fuel and the blossoms



Mesquite is the most important honey plant of the arid Southwest.



Acacia amentacea.

served the bees as an important source of nectar.

Mesquite is very probably the most important honey plant in all the Southwest. The honey is of a light amber color and good quality. Beekeepers living in Texas reported to the writer that the honey is lighter in some seasons than in others, and that this is the case when no other plant blooms at the same period, so that the difference cannot be laid to the mixture with honey from other sources. They reported also that it yields more regularly on light sandy soils than on heavy land. The first blooming period usually comes in April, followed by a later one in July. If there is plenty of moisture it blooms profusely. Mesquite is the source of immense quantities of honey and except in cases of excessive drought seldom fails to yield something, although in portions of its range it does not yield regularly.

Huajillo (Wa-hi-ya)

The beekeepers of the Southwest boast of the quality of the huajillo honey. Huajillo is one of the acacias (*Acacia Berlandiera*), but apparently



Acacia Greggii.

not of wide distribution. Coulter gives the range as "from the Nueces to the Rio Grande." The honey is white and of mild flavor and in favorable seasons is stored in great quantity. Many carloads of this honey have been shipped from Uvalde, Texas, and nearby points. In the Uvalde region, every beekeeper visited spoke of huajillo as of first importance, although many spoke of it in connection with catclaw, and did not seem to know which was the more important. A rain while in bloom stops the flow and the beekeepers report that the flow is more often cut short because of rain than for the lack of it. With a little moisture present in the soil the desert plants bloom freely, and in this region it does not require much water to bring out the bloom.

Catclaw

The catclaw (*Acacia greggii*) has sharp curved thorns shaped like cat claws, hence the name. It is common all over southwest Texas, southern New Mexico, Arizona and south into Mexico. It is one of the main sources of surplus honey in this region. The catclaw is a small tree which is sometimes called Paradise flower, or devil's claws, names of rather opposite significance. At Brownsville local beekeepers state that catclaw begins to bloom in February and is the source of some early honey. At Mercedes beekeepers report that it fails in extremely hot weather. The first flow comes in April, with a second in July. At Mathis the first flow from catclaw sometimes comes as early as

March. Beekeepers at this point report that in a normal season they expect 100 pounds of surplus per colony from catclaw, mesquite and huajillo. There are few places which the writer visited between Brownsville and San Antonio where the beekeepers did not mention the three plants together. Apparently the flows interlap and the honey is so mixed that they are unable to determine, in most cases, just what proportion should be credited to each of the three sources. One did not get far west, however, until mesquite was reported as uncertain, and the honey was mostly credited to catclaw and huajillo.

The round-flowered catclaw (*Acacia Roemeriana*) is also common throughout south and west Texas. It is said to be an important source of honey, also, but the tree is not as common as the first named species.

Another species, *Acacia amentacea*, grows in the same region, but Scholl reports that it is not of importance as a source of honey, though the tree is plentiful in southwest Texas. He reports it as the source of pollen principally.

Como and Gum-Elastic

There are three species of *Bumelia* common in south Texas. Como is the Mexican name for the southern buckthorn (*Bumelia lycioides*), which is to be found from Virginia south to Florida and west to Arkansas and Texas. In south Texas it is considered very valuable as a source of nectar. There is another species *Bumelia angustifolia*, which is common from Pearsall to the Rio Grande, and which blooms from October to February. H. B. Parks, considers this the most valuable species. Probably few beekeepers make any distinction between the two, since both are called "Como," or "Como." In the region south of San Antonio one hears como mentioned as one of the principal sources of honey. In the Rio Grande Valley it is reported as yielding for as long as six weeks in late autumn and winter. Grant Anderson states that he

has known swarms to issue as late as December and yet get sufficient honey from this source to carry them through the winter. The honey is light amber and of good quality. The flow is reported as uncertain, depending upon the rains.

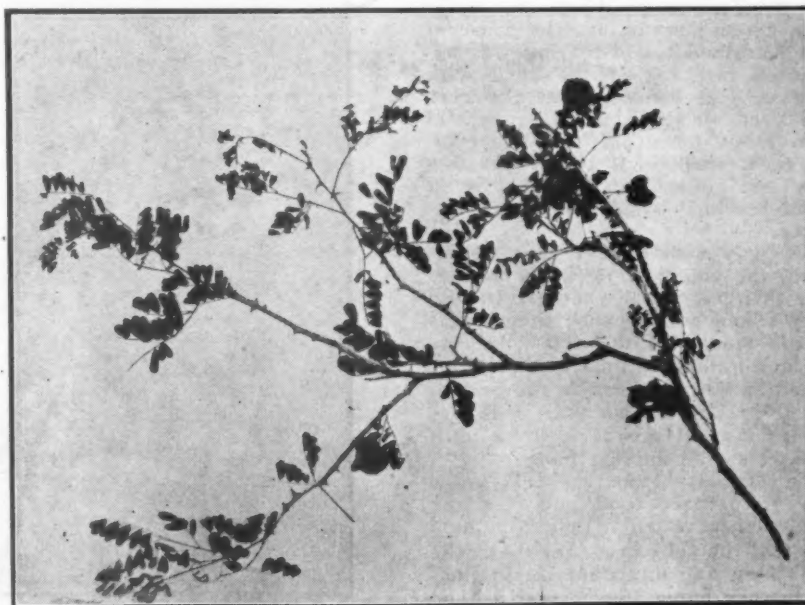
The gum-elastic or shittim wood (*Bumelia lanuginosa*), also sometimes called Arizona buckthorn, is also common in that region and yields honey freely. There are reports to the effect that surplus honey gathered from this source along the Trinity River sometimes sours in the combs after being sealed.

The bumelias are small trees with very hard wood and with small white flowers scattered along the stem as shown in the picture. Some species have spiny branches. The fruit is small and black and somewhat resembles a cherry with a large ovoid seed.

Instinct and Reason

By J. E. Crane

IN my youth I remember reading about "Reason and Instinct." Reason, it was said, was the attribute of man, while the lower orders of life are governed by instinct. This is doubtless true in a general way, and yet, if we study the subject carefully we may find that neither man nor what we are pleased to call the lower orders of life have an entire monopoly of either instinct or reason. The infant of a few days knows how to draw nourishment from its mother's breast without thought or reason, and if in pain or discomfort, from any cause, it makes it known by crying. Both these attributes appear to be purely instinctive, and are necessary for the preservation of the life of the child. It has had no time to learn. The life of a bee is very brief during the active season, and as a consequence it must know instinctively what to do and how to do, if the colony is to survive. But in the brief time in the life of a bee it has

The round-flowered catclaw (*Acacia roemeriana*).

an opportunity to learn many things and to think or reason, or do something akin to reason. When old enough it leaves the hive, by instinct no doubt, in search of honey and pollen. By instinct, when loaded, it returns to the hive in the most direct way which we call a "bee line." But should a hill intervene or a heavy wind bother, the bee often appears to reason that it is easier to leave the bee line and return in a somewhat round-about way around the hill, or in the lee of forest.

The preparation for swarming by starting queen-cells is doubtless the result of instinct. But when a queen is superseded, is it by instinct, or reason? If by instinct there would be few exceptions, it would seem; but there are so many times during summer when an old or worthless queen is allowed to remain at the head of the colony that we are inclined to believe that where supersedure occurs it is the result of reason rather than instinct.

A most striking and interesting illustration of the power of thought and reason over instinct in bees is found in the rearing of brood. With the return of warm weather, after the long months of cold, the opening of flowers, the constant loss of bees from old age, the instinct for rearing brood is stimulated to the utmost. Yet, should the honey stored in the hive the previous year be getting low, with little or no honey coming in, the instinct for rearing brood is curbed, and reason seems to be the controlling factor.

I remember the first colony of this kind that I discovered, some fifty years ago. I had been watching it with a great deal of interest through the early spring, opening it at frequent intervals, and noting how fast the combs were being filled with brood, when brood-rearing suddenly was halted, and my visions of a powerful colony early in June began to vanish. What could be the cause? Noting the short supply of honey in the hive, although they may have been a few pounds left, the cause of the decreased brood-rearing was accounted for, and I was filled with surprise and emotion that the bees had been so much more thoughtful than I had been. If honey is coming in in small quantities every day they will consume it in the hive in brood-rearing almost to the last ounce.

We may well believe that by instinct the young larvæ know how to take their food, and when grown spin their silken cocoon with their heads to the mouth of the cell. Perhaps one in a million will allow itself to be sealed up with its head to the base of the cell. This shows that there are exceptions or mistakes even with instinct as the guiding force.

By instinct the mature bees know how to prepare food and feed the young larvæ, when to withhold food and seal the cells that they may take their long nap undisturbed. Instinctively they know how to rear a good queen, a little trick that has taken

many beekeepers a long time to learn, with all their reasoning powers. By instinct they know how to gather the tiny bits of nectar, reduce it to the proper consistency and seal it; also secure a supply of pollen for a season of scarcity.

Instinct teaches the queen to lay but one egg in a cell and the workers to rear but one larva in a cell; but it sometimes happens that the queen will lay more and the workers try to raise more than one in a cell, which again shows that instinct is not infallible.

Instinct teaches the workers how to prepare their wax and build their beautiful combs so perfect that no mathematician can hope to improve upon their design. So wonderful a thing is this attribute of bees that we call instinct, we cannot help inquiring what it really is. Is it anything but the knowledge and skill given them by their Creator untold generations ago, perhaps when "the morn-

ing stars sang together," and this knowledge and skill has been handed down unimpaired from generation to generation through the tiny egg that the queen lays with one end attached to the base of a cell?

Is there anything in the material world about us more wonderful than this?

When a young bee first leaves the hive it has to learn its location and way back to it as truly as a child has to learn its A-B-C's or to talk; so it would seem that bees learn and think where they have time to do so, but of a large share of their activities they have no time to learn, and instead have been so richly endowed with instinct that they are able to fulfill the great work for which they were created.

Mary had a swarm of bees,
Who just to save their lives,
Went everywhere that Mary went,
Because she had the hives.



Blossoms of huajillo (pronounced wa-he-ya).

TOULOUSAN BEEKEEPING

Old Methods and Prejudices in
Southern France

By Victor Dumas

TOULOUSE is a city of a quarter million inhabitants. As she spreads gracefully in a narrowing valley and upon the western slope of the steep hills, on both shores of the river Garonne, her houses might be reflected in the stream, were it not that the stream is too rapid, too rapid even to reflect in its waters the blue sky above, which is not always as blue as it is reported to be.

Toulouse is known especially for her "Academy of Floral Games." This name is due only to the fact that flowers of gold or silver, or gilt, are awarded to the most harmonious recitals of the poets, who compete for these prizes. It has nothing to do with the verdure of its landscapes.

This preamble is meant to impress upon the reader the fact that, in describing beekeeping in this region we may not give him the idea that this fine city is but an obscure county seat. The vicinity is quite favorable to apiculture. The soil is fertile; the rainy season more satisfactory than in the Mediterranean region; the crops of alfalfa and esparcet are well distributed through the country; basswood trees are numerous in the

public avenues and in the parks; finally, the black locust is found plentifully on hillsides and in groves.

The winters are mild, the thermometer often up to 60 degrees F. towards the end of December and averaging from 18 to 30 degrees in January. If the months of July and August did not sometimes give us as high as 100 degrees, and if they supplied less wind and more rain than we get usually at that time, all would be for the best.

We have a "Societe Meridionale D'Apiculture," which, I acknowledge, I never joined. It is composed mainly of priests, physicians, dwellers of chateaux and other amateurs, with but few lawyers. Evidently the latter realize that bees are beings of action and not of speech. The president is past 80. Very few educated men of that age, in France, are without an honorary position of this kind. We evidently attach to them a reputation of experience and show our respect through a tribute of honor which old people readily accept.

We are certainly, in France, like a colony of bees which does not grasp the necessity of superseding its queen. I do not mean to apply this to the present case, for this president, through his love of the bee, his devotion to the cause of beekeeping, deserves his honorary position.

Not one of the members, that I know of, is a professional apiarist. The priests, village curates, are among the best members. Some of them

own as many as 30 colonies, and one of them even owns an outapiary. A couple of doctors and a few agriculturists, with perhaps a dozen hives each, make up the remainder.

The association owns an experimental apiary in the outskirts of the city. At last accounts it was composed of 3 colonies in movable-frame hives.

The principal results of the society influence in apicultural expansion, appears to be found in a series of trials in beekeeping, vestiges of which are seen in the chateaux of the vicinity, often in the shape of a few empty hives in an attic; or under the trees of a grove; perhaps a hive partly hidden in the grass, with its cover upside down, indicates that the fear of stings prevented the returning of it in its place.

It is thus evident that, as to the quantity of beekeeping and honey production, the peasant holds the record. Yet in many cases, the number of empty skeps is in proportion of ten to one to the live colonies. But nevertheless, each of these men, being a "fatalist," readily decides that it is all a matter of luck and does not hesitate to give a lecture in beekeeping which I must hear.

One must not storm or swear about the apiary, nor annoy them by poking in the hives with a stick, for they would inflict upon you many bad stings, the worst of which are inflicted by the "abeillauds" (males). To cure stings you should rub the wound with four different leaves. Beemoths kill them. They die also if you sell them. But you may exchange them for wheat or thanks. You must not harvest the honey at any time except at Candlemas, or they will die. They will die as readily if toads come near them; but they will die most assuredly if you have not the "gift" to handle them, of if you do not put them in mourning in case of a death. In short, it makes one wonder why, when a man knows all these conditional requirements, there is any excuse for any of them to die at all.

It is well, however, to state that, at least, they have ceased to brimstone the bees for their honey, as they used to do. Occasionally they come to ask me to help remove a colony from a tree trunk. I might point to them the possibility of using a wick of brimstone, but it would not be safe. I prefer to introduce the bees into one of my movable-frame hives, which they commonly call "drawer-hives." The most interesting thing they can see in a "drawer-hive" is the possibility of having a pane of glass on one side of it, so that they may be able to look inside. Any respectable modern hive should possess such a pane of glass. But as for the frames, they consider them only as impediments, obstacles to the free work of the bees. When a countryman happens to find one of these hives in the rubbish of a chateau, as he does not attempt to use comb foundation, the bees follow their own devices and the entanglement of combs and frames makes



Como (*Bumelia angustifolia*) is abundant in southwest Texas and blooms from October to February.



Baptist Beck, three score and ten years of age, with his bees.

a damnable arrangement from which, although the honey will leak at the least attempt at removal, it becomes possible to secure almost anything but honey.

So they come back to the old skep or "buc," as it is called here, a hive made of 4 boards 10 or 12 inches in width and $3\frac{1}{2}$ to 4 feet in height, with two sticks crossed, near the center, which are supposed to separate the brood chamber from the super, for it is there that the avidity of the honey gatherer is understood to stop, when the time comes to remove the honey. A board at the top and a tile under the bottom, with a few holes bored on one side near the bottom, for entrance, finish up the "buc."

Do not imagine, however, that the building of such a hive is a simple matter. You must use boards of poplar, cut during the dark of the moon, else the moths will destroy your bees. On the principle that "good soups are made in old pots," an old "buc" is better than a new one, for a new one may not please the bees, while an old one has been tested. Bees are queer beings, that is why each colony makes different honey.

If you figure out the differences in the bees, in the age of the "buc," the influence of the moon, the quality of the wood, you will acknowledge that beekeeping under these methods is an art. A man is courageous, indeed, who manages to keep bees under such Chinese-puzzle conditions.

As for the movable-frame hive keepers, the greater number use the Layens horizontal (long-idea) hive, or the Dadant-Blatt. Others, still, use hives of their own devising, high, or long, or wide, or with frames crosswise, a mixture of models which would be impossible to manage if they tried to do anything with them outside of harvesting the honey. No wonder that, often, the peasant gets more results from his "buc" than from the modern hives.

Letting a Pocket in the Hills Fulfill Its Destiny

Florence L. Clark.

OH, the most wonderful thing I ever saw over on the island yesterday! I took a boat and went over, and everywhere, all around, wild cucumbers; oh, so pretty, and my bees all over them."

Old Baptist's eyes shone and he gesticulated with the energy of youth despite his seventy years, as he talked in his broken English. Then he pointed to a hive that had more supers on it than any other of the three hundred in the bee garden. Scrawled across the top was a sentence in German.

"Know what that say?" asked Baptist. "It say there, 'Goot work. I dank you.' When my bees they do goot, I tell them."

Baptist Beck's apiary promises to produce 6,000 pounds of honey this year, and has yielded its owner good money for twenty years, largely, as he believes, because nature fashioned a little paradise for bees where his apiary now is, and when he drove his homestead on the spot he saw nature's plan and fell in with it. The only "improving" Baptist has done is to make the place a little more wild by adding to the natural profusion of plant life as much more of a tangle of flowers and vines as he could make the soil produce.

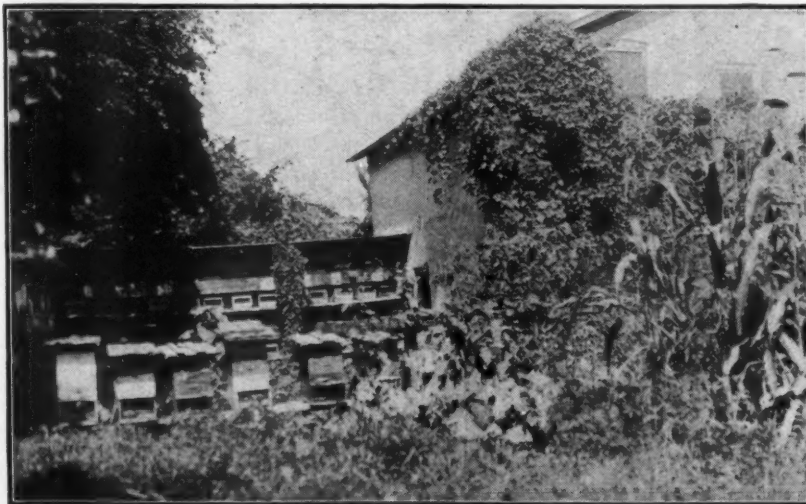
It is in the Mississippi hills, up Miner's Creek, just south of Guttenberg, Iowa, that Baptist lives and grows honey. There is no main road leading that way, no other house on that side of the valley. The rambler over the hills finds a foot path in the woods and following it comes upon the gate to the bee paradise. Just inside, a great spring pours from a dark hillside into a big wooden vat arched over with a venerable grapevine. A step or two from the spring is the home, an old stone house built way back in the days when they dug for lead in the hills round about and dreamed of rich mineral treasure that never came true. More grapevines climb over the house and make a

wide natural back and side porch. At the front of the house is a sight to charm nature-lover, artist, poet, beekeeper or what not. Hills two hundred and three hundred feet high tower in a horseshoe about a wonderful little pocket of a garden. Through the opening in the hills to the east is a vista of bottomland, Mississippi and island. The hills are covered with the wild beauty of tree, brush and vine characteristic of the Iowa bluffs. The bottom land is a lush mass of lowland plants. The island is out just a bit in the channel and there is white clover, locust, wild grapevine and the wild cucumber. Basswood is abundant on the hills and white clover on the bottom lands.

The late August morning I saw Baptist's garden; it was ablaze with the yellow of sunflowers and golden-rod, splashed with great red splotches of princess feather. In the center a fountain of water from the spring ran into a cement pool. The beehives stretched in a semi-circle around the edge of the garden, back up against a high bordering of wild grapevines. In among the flowers were corn, tomatoes, cucumbers and canteloupes for Baptist's wife grows garden stuff for market, while he raises honey.

The hills, bottoms and island are as much Baptist's property as though he owned them, for nobody ever disturbs their natural growth of trees and plants. So, in the spring, "Monarch of all he surveys, his right none to dispute," he goes out with a sack of white clover seed and scatters it over the bottoms and out on the island, making a great bee pasture all around his little garden. The hills, island and lowlands give the greatest imaginable profusion of honey plants throughout the spring, summer and fall, though Baptist regards the island as his particular treasure trove, next, of course, to the basswoods on the hills.

The nearness of the island to the mainland makes it a safe pasture. This is in contrast to the experience of other beekeepers in the valley somewhat north of the one in which the Beck apiary is located. Here the islands are quite a distance from the



Baptist Beck's apiary, with grape vines over the house.

shore. The bees seek them for the cucumber and locust just as they do for Baptist, but the distances are so great that the bees returning with their loads often do not reach the shore in safety. Mrs. J. Clark, a beekeeper in a valley twenty miles north of Guttenberg, has removed her apiary several miles back from the river to prevent her bees from going to the islands. It is her theory that as they return homeward, the bees, because of the load they carry, fly close to the river's surface. Becoming weary in the long flight they see their reflection in the water and, thinking it is land, drop down.

Baptist tells this about his fountain: Soon after he had built it he began to notice dead bees in the water. He was puzzled to determine what attracted the bees until he made the discovery that they came seeking the moss that had formed in the fountain. "I think they liked a kind of salty taste it had," he says. The moss was removed and has been kept out since, and no more loss of bees has occurred in this way.

Iowa.

A New Way to Hive a Swarm

By F. Dundas Todd.

A NEW fact in bee behavior, or a supposed new fact, is always interesting to me, so I store it away in my memory, convinced that some day another new one will come my way, one that will combine with the older one, and the consequential result will be another new idea applicable to practical beekeeping. Here is my latest experience:

In 1911 I had the pleasure of spending a couple of days with that veteran beekeeper, Jacob Alpaugh, now playing with bees in Florida, and he drew my attention to the fact that seemed to him to prove that bees could hear. We were watching a swarm entering its new home, which was situated alongside of a very dense mass of tall trees, the front of the hive being at angles to the line of the clump of vegetation. Hundreds of bees were soon flying along

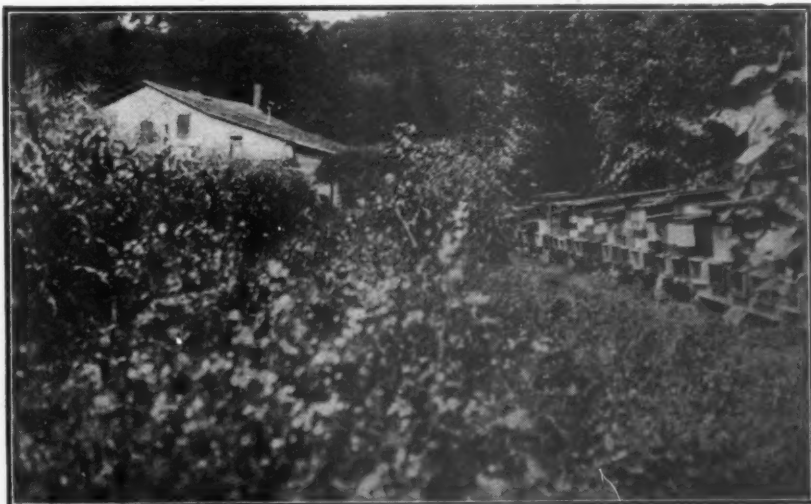
the face of the mass of grass as if looking for something, and Mr. Alpaugh asked my judgment as to their purpose. I had no opinion to offer, so he told me that from his point of view they were attracted by the echo of the noise made by the fanning bees at the entrance of the hive, and that therefore bees must be able to hear.

This past season I was lucky enough to have a visit at my own apiary from his brother, Ephraim Alpaugh, and naturally I told him of my experience with Jacob. On recounting the swarming incident and mentioning Jacob's deductions as to hearing ability of bees, he assured me he had better proof, which he utilized for many years in a very practical way in swarming time. When a swarm clusters he never troubles to gather it in, but he puts the new hive as near to the swarm as possible, picks a handful of bees from the bottom of the cluster, throws it on the alighting board close to the entrance, then proceeds about his regular work. As soon as the bees start fanning at the doorway, the cluster begins to break up and in less than a quarter of an hour all the bees in the swarm will have joined those at the hive. In his judgment the bees of the cluster hear the cheerful call "Home is found," and at once join their sisters. I must confess I was rather incredulous, but a friend who was with Mr. Alpaugh assured me he had seen the act done a score of times without a single failure. Naturally I wanted to know just how far bees travel in such circumstances, and Mr. Alpaugh said that on one occasion the swarm had clustered on a fence rail and post, so out of curiosity he placed the hive on the ground 12 feet from the swarm. On this occasion the bees did not fly but crawled down the post and marched like an army along the ground to the hive. It was about the most interesting sight he had seen in his beekeeping career.

His news was too good to be kept, for, if true, it solved very simply many awkward swarming problems.

I have vivid recollections of a lady dramatically reciting her troubles with a swarm that landed on a stump which was covered with a big growth of wild blackberries whose prickly stems forbade all attempts to handle the bees. Seven different swarms had landed in the same place, and she lost them all. She denounced her book of instructions (I was the unfortunate author), which told her how to handle a swarm that clustered on the branch of a tree, but her swarms never went on trees, they always preferred inaccessible stumps. I grinned for a quarter of an hour, and the more I chuckled, the warmer she got. It was one of the most delightful episodes of my life, so picturesque and so free was her flow of rhetoric. Well, I passed the good news along, and then one of my young beekeepers said, "I want to make a confession to you, I have been practicing this system for three years, but with a rather silly addition, so I have always been afraid to tell you about it." It seems he was one day about to gather in a swarm that had clustered on a bunch of grass when an elderly woman who was passing said, "Let me show you how we handled that kind of swarm back in Ontario." She set the front of the hive on the edge of the cluster, laid a few grasses with adhering bees at the entrance, then proceeded to bang the rear of the hive with a stick. To my friend's surprise the bees left the grass and entered the hive. The lady claimed the noise attracted the bees of the cluster to those on the alighting board. He had practiced the method many times without a failure, but hated to own up that he had in any way made a noise, feeling I would ridicule the idea.

Next in order was a day spent with Mr. F. W. L. Sladen, Dominion apiarist. Such a day is always a red letter one, for I advance all my latest notions and chuckle with glee as he runs his little scalping knife through them, sweeps aside all the non-essentials, and gets at the meat in the kernel. I set forth all I have said above, then awaited the outcome. "No proof that bees can hear, just confirmation that they can smell. Over twenty years ago I pointed out that there are many scent glands in a bee's abdomen, and that when bees fan their wings they scatter the scent for many yards around them to attract others. The scent will easily travel a dozen feet. Furthermore, I believe that when bees are clustered in an inaccessible position, such as the limb of a tree, the beekeeper need not get bees from the cluster; those from any hive will do just as well. Just take a frame of bees and shake them in front of the new hive; the old ones will fly home, the young ones will take possession and fan for help. The scent will reach the cluster, and its members will join those on the entrance board. Some day when you see bees fanning, just put your nose close and you will smell the scent, which has an odor like iodine."



Baptist Beck's bee garden. Old stone house in background

All of the above came to me after the swarming season was over, so I have had no chance to try the idea, but the practical application to hiving a swarm is vouched for by four gentlemen in whom I have every confidence, so I hasten to pass along the good news. If the method works as efficiently as it is said to do, the beekeeping world has learned something worth while.

Victoria, B. C.

Beekkeeping in Costa Rica

By W. B. Gehrels

(Continued from January)

AFTER fitting out a temporary home in San Jose, I began to look around for bees and the best location for an apiary. After a futile hunt for bees for over a month that took me over the largest part of the country, I finally gave it up and moved my family to Puntarenas on the west coast, as I had decided that this part offered the best prospects for beekeeping, shipping my bees here, also.

Then I was called to Panama on other business, returning to Puntarenas in October. The bees were then ready to swarm, with the hives full of the best-flavored white honey. The next thing necessary was some empty hives and new supplies. There was very little in this line in Costa Rica, and to order supplies from the States for immediate use was out of the question, as freight rates, duty, etc., were almost prohibitive, and shipping was in such a condition that you were considered lucky to get your goods within six months after placing the order. And then, what amount of supplies would I need for the increase from six colonies? Everything looked promising to us, but everything was new, and you cannot judge correctly without some previous experience.

I went into the country and bought 15 fine logs of suitable timber for lumber, took them to the nearest sawmill, and had them sawed and planed in boards seven-eighths inch thick and from 10 to 16 inches wide. Then I put up a saw table and gasoline engine at home and made by own bee hives. The natives called it a "honey factory." We used pochote timber for lumber, which is a variety of Costa Rica cedar. This is a red, fine-grained, soft wood, very easy to work, which shrinks and warps very little, is proof against the attack of wood ants, and very durable. It can be bought in the log up to 48 inches in diameter.

By the last of March we had increased the six colonies to 75, and also secured over 3,000 pounds of honey, notwithstanding we had a great deal of trouble in getting the queens mated and laying. From 60 to 75 per cent of the young queens would disappear about the time of their wedding flight. This trouble we attributed to our location. Puntarenas is on a narrow peninsula about 5 miles long and from 150 to

300 yards wide, and water on both sides. Under this condition the queens had a good chance of dropping into salt water in taking flight.

We ordered a honey extractor from the States in November, which arrived at the end of March following, almost in time to take off our crop of honey. I had just finished extracting with a small extractor that I had borrowed in San Jose. The manufacturer of whom I had ordered my machine stated that the delay was not his fault, and that we were lucky in being able to get shipping space at all.

At any rate, we had increased from 6 to 75 colonies, and secured 3,400 pounds of honey in about 5 months' time, over half of the honey being as good in quality and flavor as white clover or Texas catsclaw, almost water white, and very thick. Honey does not candy at Puntarenas.

About this time the rainy season set in and the honey flow decreased. The rainy season lasts from April to November, and is called winter here. During this time it rains almost every day. The dry season lasts from November till April; this is called summer. During this entire period there often is not a single shower. This dry period is the time of heavy honey flow, everything blooms abundantly and this gives an ideal extracting and working season. This condition prevails on the west coast, or the western slope of the mountain only.

Nothing seems to disturb the flow of nectar, except possibly an occasional day when we have north wind. This produces a very dry, hot atmosphere, which reduces the honey flow some. The tides also seem to affect the secretion of nectar, possibly not the tides themselves, but the same force that produces the tides. The strongest honey flow lasts about 3 hours during each day, and this time seems to vary with the time of the high tides. This may seem superstitious to some.

There are no end of flowers in bloom the year around, but the heaviest bloom period is during the dry season. I will take up the honey-

producing plants of Costa Rica in a future article.

In view of the large number of young queens that we were losing, our next step was to move our bees a few miles inland, where the queens would have enough land space to take their flight. Consequently we purchased two lots in a small village about 3 miles inland, across the bay, at the edge of the mangrove. Here the bees had access to many varieties of honey-producing flowers.

Our local honey market is fairly good, but we shipped our honey in bulk to Liverpool, England, from which source we had the best prices offered.

The new site that we bought for an apiary is about 2 miles from Puntarenas, across the bay, on the main land, and can be easily reached by boat. The place had cocoanut palms, mango, guava and some kojol palm trees, and was covered with weeds, vines and brush and infested with ants, rodents, toads, crabs and iguanas. We cleaned, burned, poisoned and used the shotgun until, at this writing, 12 months later, the place is transformed into a presentable apiary and orchard.

We moved our bees by loading them on a dugout or bongo, which is a boat cut out of a tree by the natives. For power we used the current of the rising tide. Returning with the empty boat on the falling tide, the current is very strong here owing to the great rise and fall of tides.

At this location the bees have mangrove on one side, and forests fields and pastures on the other side.

We placed the bees on benches two feet from the ground, facing each colony in alternate directions, this to save room on the benches, as we can thus place them very close together, and still minimize the danger of losing young queens, which often happens when the colonies all face the same direction, and are close together. We also made our hive bottoms very short, projecting an inch and less for alighting space, in order to have less room for toads and iguanas to hold on while they eat bees.

For shade during the summer or dry



A Costa Rica apiary under papaya trees one year old from seed.



Texas beekeepers go to school

season we planted rows of papayas between the rows of bee hives, and they now more than serve their purpose, as most of the trees are loaded down with fruit, and the fruit is delicious and can be eaten straight, or with cream, made into candy, or preserved. The blossom also yields honey, but the bees only seem to work on the trees that produce the male flowers, these trees have smaller flowers and produce no fruit. Early in the morning and late in the afternoon the bees fairly swarm over these flowers, humming birds, millers, butterflies and native bees also visit them.

Large trees and too many plants are undesirable in an apiary here because too much shade attracts ants, cockroaches and other insects, as well as it gives a harboring place for birds and iguanas. I believe the best thing for shade is a single shade board, or a mat made out of stitched palm leaf and one placed on each colony during the summer season. During the wet season no extra shade is needed.

(To be continued.)

Texas

By E. G. Le Sturgeon

THOSE beekeeping communities that have not had the advantages of one of the Short Course Schools under the direction of Dr. E. F. Phillips and his corps of assistants can have little conception of their great value. I will admit now that the Texas beekeepers accepted the idea of having one held at San Antonio more in the spirit that "it was the thing to do," like a woman wearing a hobble skirt, rather than from a realization of its need and its great value.

We gathered from far and near in great numbers (over 128 out-of-town bee-men registered for the school), and waited rather curiously for the show to begin. One Nueces Valley beekeeper said: "I am going to attend the opening session. If it is not worth while I can quietly drop out and go home." He staid until the last word was spoken. A Laredo beekeeper said: "I have to go home Thursday night. I will only attend the first four days." He remained over Saturday. He could rather lose his business engagement at home than miss a single lecture. A Jourdanton beekeeper intended to attend only one-half the sessions, be-

cause of other business, but could not do so. He said: "The program fits together like the corners of a dove-tailed hive. I simply had to attend every session or lose my object in coming at all."

These are only typical instances. They could be multiplied many fold. The programs for the school are carefully worked out and are carefully carried forward as a constantly developing theme. Mr. Demuth, in his expositions of beekeeping practice during the succeeding seasons, follows very closely the lines laid down by Dr. Phillips in his discussions of bee behavior.

Mr. Sturtevant gives a careful survey of every phase of bee disease and makes plain to the lay mind the symptoms and effects of known bacteria. A Waxahachie man who had long served as Inspector in his county, arose in open meeting and said that the one lecture on differential diagnosis was alone worth more than the cost of the trip to San Antonio and the week lost from his business. He merely expressed the thought that formed in the mind of every beekeeper present.

The school afforded the honey producers of Texas an opportunity to become acquainted with our new State Entomologist, Dr. M. C. Tanquary. His lecture on the life history of the bee proved to be one of the best numbers on the program. One evening he also gave an illustrated lecture depicting his life in the Arctic while zoologist with the Crockerland expedition.

Mr. H. B. Parks, our State Apiculturist, who has in his charge the newly-established Texas experimental apiaries, was "Principal" of the school and presided during its sessions. One of the most enjoyable entertainment features of the week was his illustrated lecture on the Aleutian Indians. While in the Indian school service of the Department of the Interior, Mr. Parks heard much of the folk lore of these interesting people, which he gave us in a connected and interesting manner.

Our responsibility, as commercial honey producers to the beginner in beekeeping, was discussed by Mr. Kenneth Hawkins, specialist in beekeeping for the G. B. Lewis Company. Mr. Hawkins pointed out the need for intelligent propaganda and the responsibilities that rest on us toward those who are still in ignor-

ance of modern methods of apiculture. His close acquaintance with southern beekeeping gave his remarks peculiar emphasis and increased their practical application and value.

The climax of the session came Friday night, December 19, when the entire school of beekeepers "clustered" for a typical Mexican dinner. Dr. Phillips had told us to expect clustering at about 57 degrees F., and that the temperature of these clusters would then rise. Thanks to the pungency of some of the viands served for dinner, the prediction was certainly verified. Many pleasant memories were carried away by all who participated in the unique and inimitable event.

San Antonio, Texas.

Fertilizing Drone Eggs

I find the article by Gilbert Barratt on fertilizing drone eggs particularly interesting, because it appears to disprove that which Dr. Phillips has so consistently maintained both in his book, "Beekeeping," and also in his California lectures, namely, that the sex is determined before fertilization.

I quote from his book, page 188: "It seems clear, however, that the statement of Dzierzon that all the eggs in the ovary are male eggs cannot be accepted, and it is, in fact, not improbable that the eggs destined to be females die for want of fertilization, while the eggs destined to be males, not requiring fertilization, are capable of development."

Now, if that were so, fertilizing a drone egg artificially would not make a female of it. So if Gilbert Barratt's experiments are correct, as I have no doubt they are, then Dr. Phillips will have to modify his theory.

Dr. Phillips attached a good deal of importance to the fact that bees did away with the eggs of a drone layer. To me this does not seem so very important, as I know bees will remove eggs of a normal fertile queen if they cannot look after them.

The bees can probably tell whether an egg is fertile or not. And in the case of a drone larva they probably get disgusted at seeing nothing but drone eggs, especially if they are in worker cells, and consequently eat them up sooner than raise useless stunted drones.

WILL H. GRAY.

British Columbia.

Attendant Bees for Shipping Queens

Some time ago a question was raised as to the age of bees which is best for caging for shipment with queens. The question was presented to several queen breeders and some of the answers are as follows:

I believe it advisable to mix the bees in shipping queens. That is, put in about half young bees just emerged from the cells and half older bees having their honey-sacks well filled with honey. I adopted this plan early in my career as a shipper of queens, and have found it very successful. To go into details as to the way I pack queens for shipment, in using the ordinary 6-hole cage I first run in the queen, then run in nine young bees—those whitish looking bees that have only been out of the cells a few hours—then run in ten of the older bees that have their honey-sacks well filled. I used to have quite a trade in queens to Europe before the great war came along and broke it up, and before the great drought in southwest Texas broke me up, and I used the large export cage for that trade. In preparing that for mailing I put in 19 young bees and 20 large bees. I was almost universally successful in shipping queens, the few losses I had probably being caused by fumigation of the mails at some place en route. I have had them on the road for as much as 18 days and arrive in good condition, only a few of the bees being dead. I consider it very important that the older bees selected as escort for the queen should have their honey sacks well filled. This makes them peaceable, so that they are not inclined to ball the queen in the cage.

Texas.

H. D. MURRY.

Replying to yours of late date regarding attendant bees selected to accompany queens in transit, I beg to say that for short distances I take the first I can get, usually those with heads in cells, as this makes it short work to pick them up by the wings. I avoid all bees with abdomen padded out as though full of food.

For long distances I am more careful. Pass your hand a few inches above the surface of the comb and the bees that look up at the hand and hold their wings up make the best shippers, according to my experience. These you will find have empty stomachs. In shipping to Cuba many years ago (in my infancy) I decided that the bees should start well fed. I placed the cages on a paper well smeared with honey and let them take their fill. Every queen and bee arrived dead.

JOHN M. DAVIS.

Tennessee.

L. E. Miles, Balboa, Canal Zone, writes to J. M. Davis:

"I received the six queens by yesterday's boat, 5 living, one dead. The five were in the best condition and one cage had a comb started in it and the queen had filled the six cells full of eggs. It may be common, but it was a surprise to me."

Bumblebees and Smoke

With reference to the article on the bumblebee by H. B. Parks which appeared in our December issue, F. W. L. Sladen writes to confirm Mr. Parks' experience that these insects cannot be readily subdued by smoke. Mr. Sladen says that in his experience they cannot be subdued by smoke and that either cyanide or ether is necessary. Mr. Pellett, in a foot note to the Parks article stated that he had been able to subdue them readily with smoke. In this case the weather was warm and conditions were quite normal with the colony. It is possible that some other factor entered into the case which was not noted, and the smoke credited for a condition for which it was not responsible. Further experiment on this point is worth while in order to definitely settle the ques-

tion, and it is hoped that all three of the above named men will try again next summer. We will welcome the experience of others who have given the matter a trial.

A Beekeeping Survey

In order to secure information on which to base plans for future work in beekeeping at the Iowa State College of Agriculture, Professor Paddock is undertaking a survey of the beekeeping of the State. Letters have been sent out to a large number of representative beekeepers asking information regarding the extent of their operations and the general nature of their methods. It is to be hoped that all beekeepers receiving this letter will reply promptly and fully so that the college may have full information regarding Iowa beekeeping.

BEEKEEPERS BY THE WAY

A Beeman From Nebraska

H. C. Cook, of Omaha, is a retired policeman, but retirement from the police force with him did not mean inactivity. Cook is a beekeeper, and since his bees provide for him more generously than the city did during his long service as a policeman, it is evident that he keeps busy most of the time with the bees. His apiary is one of the show places of Omaha and hundreds of visitors call to see something of the honey-gathering industry. With about a hundred colonies on a city lot he furnishes a splendid example of intensive beekeeping. His annual returns from the bees run

from \$1,200 to \$2,400 per year. When the writer first heard about Cook through a writer for the agricultural press, he was greatly disposed to doubt the stories as told. A later visit was sufficient to bring conviction that Cook is getting the honey and turning it into cash equal to the sum claimed by the enthusiastic reporter. His lowest per colony average has been 78 pounds, while he has harvested as much as 147 pounds per colony.

An important secret of his success lies in the fact that he sells his honey at the top price. He sold granulated extracted honey at 60 cents when liquid honey sold at 50 cents per package. When consumers complain that they can buy cheaper honey, Cook always admits the fact, but says that he is not competing with that kind of honey. He sells all he can produce readily at 40 cents per pound for extracted honey and \$8 per case for comb.

Cook is inclined to try experiments and to get all the fun possible out of the job while making a living from the bees. One sees a lot of things in his apiary that he never saw anywhere else. One of these ideas is a plate glass inner cover for every beehive. This is worth while, too, in a city like Omaha, for every visitor can be given a glimpse of bee activity without opening the hives. His "silo" for storing combs was described in a recent issue.

In a big city the directory usually contains rather a long line of "Cooks," and Omaha is no exception. When he discovered that his customers had difficulty in remembering his particular initials, he asked the telephone company to change his name, but not his initials. It now appears as "Honey C. Cook," and there is no further trouble because of his customers getting the wrong Cook.



H. C. Cook, of Omaha.

DR. MILLER'S ANSWERS

Prevent Swarming

I was just reading an article by E. R. Root, "Swarming via Clipped Queens." He states that when the swarm is put in a new hive on the old location (or stand), to move the old hive to a new location, cutting out all queen cells but one. But what I want to know is, could I not set the old hive close up beside the swarm, both facing the same way, and on the seventh or eighth day move it to a new location ten feet or more away? (The same as Doctor Miller advocates so much). Would that not work better than bothering with the queen cells. In cutting out the queen cells, one would always be in danger of missing one or more, besides the extra manipulation.

MICHIGAN.

ANSWER.—Either way will work. Much of the success depends upon the taste, the management of the beekeeper, the strength of the colony, the warmth of the season, etc. You need to use discretion to decide which is best under the circumstances.

Bees on Shares

If one started in the bee business without any capital, what share is customary for him, if he does all the work and everything furnished?

OREGON.

ANSWER.—Once only, I undertook to manage bees that belonged to another party, furnishing labor only. The agreement was that the proceeds would be divided half and half, each party furnishing hives for his share of the swarms. It does not seem to me that this can be improved upon.

Shipping Bees

Can bees be sent safely from Texas to the State of Washington? I am thinking of buying packages of bees in the Southern States.

WASHINGTON.

ANSWER.—We have often received queens from Europe in good shape. As to bees by the pound, many lots have been shipped from the South to Canada safely. There is no doubt that they may be transported, if properly packed and sufficiently fed, from Texas to Washington.

Gathering Pollen

What time of the season do queenless colonies gather an over supply of pollen, as stated in the December Journal? In my experience, when a colony becomes queenless during the winter or early spring, they are inactive and gather very little pollen.

ANSWER.—During the winter and early spring there is little or no pollen to gather. But when there are plenty of blossoms, if the colony is still strong in bees, it gathers a great deal of pollen, though much less than a queenright colony. As this pollen cannot be consumed, its quantity is in excess of that of a queenright colony.

Size of Frame in Modified Dadant Hive—Wintering—Vetch

1. Is the frame used in the modified Dadant hive of the same dimensions as the Jumbo, except being spaced differently?

2. In wintering bees in the Demuth cases, is it necessary to keep the entrance clear, or will it be all right to let snow drift over them?

3. Do any of the vetches which are grown for hay produce honey?

MINNESOTA.

ANSWERS.—1. Yes.

2. Snow is not injurious unless it thaws and freezes so as to make a coat impervious to air, stopping ventilation. It should be removed when there is chance for flight.

3. According to Bonnier, who shows cuts of 27 different kinds of vetch (*Vicia*), in his "Complete Flora of France, Belgium and Switzer-

land," 188 different kinds of vetch have been described in different countries. He writes:

"Many of them are visited by bees, which often gather in them an abundant nectar."

It is unimportant, as far as we know. The *Vicia sativa* is cultivated, according to both Gray and Bonnier.

Increase—Wintering

1. I have two swarms of bees purchased last fall. I introduced an Italian queen to one swarm in September, and the other, which was purchased later, has a black queen. I would like to get as large a crop of honey as possible, and at the same time increase to six or eight swarms. Will you please tell me the plan you consider best to do this? I plan on requeening my black bees early in the spring and keeping a drone trap on the hive to keep my bees pure Italian. I have the only bees for 4 miles around, and think conditions favorable for me to do this, if I use the proper care myself.

2. I have my bees in the cellar, where the temperature stays between 38 and 43, but is at 40 most of the time. One swarm is a little weak. Would you recommend putting in a division-board at this time, or would they be better left alone?

3. To keep my wife from being nervous about going into the cellar, I built a shelf out 8 inches on the front of each hive and screwed the whole front in and covered the whole thing with a burlap sack, as my cellar is too light. Will this do any damage if I clean this shelf off once or twice during the winter?

4. One colony is a little short of stores, although it has a plenty for the winter. I planned on making a plate of hard candy and putting over the frames just before taking out of the cellar in the spring. Do you think it would be better to take a frame of honey from the other hive, which has a large supply of stores, and giving to the weaker? I am forced to do my bee work before 9 a. m. or after 5 p. m., so it is necessary that I do my swarming artificially, and do not allow any natural swarms to come out.

MINNESOTA.

ANSWER.—1. Don't keep a drone trap on your hive, even if you run the risk of mismatings. A drone trap is a hindrance to success. When you Italianize your colony, remove all the drone brood. That is much better than keeping a drone trap.

2. Don't disturb the bees that are in the cellar, unless they are in danger of starvation. In that case just put a cake of feeding candy right over the brood combs.

3. The burlap sack is all right if the temperature is not so low or so high as to make your bees restless. About 45 degrees is right. Do not disturb them by cleaning a shelf so as to jar them.

4. Hard candy or honey will do for feed. But in spring honey is a little better, if the other colony has it to spare. Do not attend to this till they are on the summer stand, unless they are entirely short.

Keeping a Record of Queens

We are taught by the colleges and through apicultural books that we should keep a careful record of each colony of bees in the apiary as to fecundity of the queen and honey production by the daughters of each queen.

In attempting to do this I find considerable difficulty and have frequently wondered if the large commercial beekeepers in my country and yours do really keep such records.

To better illustrate what I mean, take the following actual example: I have a record book with ruled columns as follows:

Date, Spring, Clipped, Brood Queen, Honey, Fall, Meanings, Spring condition, Frames Brood at opening of season, Origin of queen (from whom bought), Honey Production, etc.

Now take colony No. 46, appearing in above record; originally a package from the South in early May of 1919. Record shows that on June 5 building up nicely, gave frame of brood

from No. 6; June 26 brood mostly hatched, queen O. K., but few recent eggs and three queen-cells, queen evidently failing. Cut out two cells and left colony to take care of itself; later found colony queenless and gave queen-cell from No. 24, which queen came through queen cell from No. 3, which came from queen cell No. 8. Now how is it possible to follow the record of this queen family as to previous honey production and purity of origin? Or what advantage is there in doing so? I see clearly enough that one doesn't want to breed from poor stock, and that the motto "the best is none too good" applies with much force to beekeeping, and with particular force to commercial honey production, where quantity of crop made in a few short weeks of summer makes (or mars) the whole season's business, and it is equally clear that the crop is dependent upon the productiveness of the queen (again provided the weather is favorable for secretion of nectar).

I confess that I get puzzled in that theory of "breed only from your best queen"—not theoretically, but practically, as I find it is so hard to follow up, one season not giving the necessary record of what a queen will do and the following season may be like the year just closed, a general failure in my district, and after two seasons, the queen has passed her age of usefulness.

I have been turning over in my head a remark made to me in Eaton's store in Toronto a few weeks ago, when I happened to run into one of our best-known and most successful beekeepers, a man who has been in the business for many years. In discussing some of the problems I had been trying to solve, this man said to me: "Did you ever notice that the most (and I was going to say the only) successful men in commercial honey production, the men who are making their living by beekeeping, have been at the business around a period of twenty years? Take any of our best men, say Byers, Pettit, Holterman, they have all been at it for a long time—they are able to size up the probabilities of the season at an early date and make their shifts accordingly, where a man new to beekeeping hasn't learned what his trouble is until it's too late to rectify it that season; consequently the season has passed before he really wakes up. That's the trouble with all beginners. I tell you, it takes about twenty years to make a successful beekeeper."

ONTARIO.

ANSWER.—There is no doubt that, in beekeeping as in every pursuit, long experience makes for success. So the remarks of your friend in Toronto are very appropriate and show that he has experience.

As to keeping record of good queens, I do not find it difficult. In any one season, select the colonies that have given you the best crop, and breed from those. Then keep a record of queens bred from these and select among those queens the one or two that have given pure, gentle bees and excellent honey producers. Do the same for drones.

There are bad seasons, it is true. But when you have made a selection you should have no trouble in following your good queens from year to year. A good queen, with a record, should not be discarded because of a bad season.

The best and most satisfactory queen breeders are those who select 3 or 4 excellent queens and breed from them almost exclusively. But it takes persistence, attention and carefulness of all the details.

Wintering

1. I have some bees; they were doing fine until winter. I don't understand how to keep them. I put them in the cellar; they won't stay in the hive. I put screens on the doors, and still they fly against the screen and try to get out. The cellar is dark and still. I took them outside and put about 4 inches of rye straw around them. On soft days they come out and fall in the snow and freeze. I put screens on the entrance of the hives. If I keep them in the cellar or upstairs what temperature should the rooms be?

2. Next year I intend to build a bee house. Do you think a building with about 8 inches of sawdust between the walls would be warm enough for winter without any other protection?

3. Please tell me where is the best place to winter bees. If outside, what is the best cover and how much should be around the hive?
NORTH MICHIGAN.

ANSWERS.—1. It is probable that your cellar was too warm at the time when you placed the bees in it. It is out of the question to expect to keep bees in a cellar by putting screens on the doors. If the cellar's temperature is between 45 and 50 degrees, the bees will be quiet without any screens, either on the doors or on the hive entrances. Outside, it is impossible to keep the temperature where the bees never want to fly. But in warm days it will do no damage if a few of them get lost.

2. The building that you propose to make would be all right for your bees if they can fly out whenever it is warm. Otherwise a cellar is better, in your latitude.

3. Winter in a good cellar, in your latitude. If you winter out of doors, better make outer cases with about 6 inches of shavings or similar protection around, under and above your brood nests.

Moth—Bees by the Pound—Transfer

1. I have Dr. C. C. Miller's two books ("Fifty Years Among the Bees" and "Thousand Answers") and like them both real well. I had considerable trouble with the bee moths this year. They killed out three old colonies for me and a new swarm that I caught. I have read that zero weather kills the moth, so I have left my bees out of doors so far this winter and the temperature has been down to 16 degrees or more below zero. I will put them in now. L. R. Miller's book says the Italian bees keep the moths down, even though the colony be quite small. So that seems to be another thing for me to take advantage of. Do you think I have done the right thing by leaving my bees out to get that zero temperature to kill the moths? I suppose I will get some goo from it, but suffer the loss of a few bees to pay for it. Am I right?

2. I have a hive that I bought from a neighbor last spring that didn't have good attention, consequently the lid was practically no account and the bees froze out. There is quite a lot of honey in the bottom, so I was thinking, it being dark and in good combs, it would be fine for bees to use anyway, either to feed the bees in other hives, if they need some, or to start new colonies in the spring. I shouldn't think new colonies would need very much honey at that time of year. So how would it be for me to buy some pound packages of bees and give each nucleus a frame or two of this honey?

3. When I buy bees by the pound will there be a queen come with each package, or do they only sell workers without queen? Please advise me as best you can about it. There are lots of bees in the timber here and also there are several colonies kept around over the country. So possibly I can't keep the Italians pure even if I should get a start of them. I am quite new at the bee business and don't know whether I can make a good job of finding old queens and replacing them with Italians or not.

4. I would like to get a good start of Italians and try raising some queens for my other hives. Possibly that would be better than to try to stock all the hives in the spring.

5. Another thing I would like to do is get some of my swarms into new hives.

NEBRASKA.

ANSWERS.—1. No, you did not do the right thing to leave your bees out to kill the moths. If there are any moths in them, they stay in the warm part of the hive and do not die till the bees do. Putting your hives in the cellar late in the winter is not good, because the bees are already loaded with feces in their bowels and may suffer from diarrhea.

2. Yes, if you have honey from a dead colony and preserve it you may use both the honey and combs for bees by the pound, bought in the spring.

3. When you buy bees by the pound you had best buy a queen with each lot. They ar-

rive in better condition and really need a queen. But you can buy bees without queens.

4. Yes. Try your hand at it next summer. Why should you not succeed as well as others have done?

5. To transfer your bees into new hives, wait till the bees swarm, then hive the swarm in an up-to-date hive; set it on the old stand, then set the old hive close beside or behind it. In 3 weeks the brood will all be hatched out of it and you can shake all the bees in front of the swarm. Then the combs may be used as you see fit. If they do not swarm, take off the cover, place the new hive on top of the old one and drive the bees into it, making sure that the queen is up with them. Then place a queen excluder between the two until all the brood is hatched, when you can remove the old hive.

Swarming—Extracted vs. Comb

There are so many ways and so much talk about keeping bees from swarming that a beginner is confused and don't know what, how or when. Some claim one thin and some another.

1. I want to know how it will work to use the full-size brood frames to extract from, and then I could use all bodies the same size.

2. It is all right to extract the outside frames of the brood nest and put those empty ones above and foundation below. Would they go above more readily to work and check swarming?

3. They say that the prime swarm rarely sends forth another swarm; but it is almost a sure thing with mine; as soon as they get good and strong they will swarm. I put out 23 swarms and got about 1,800 pounds of comb honey. I am thinking of changing to extracted and see if I cannot get along better.

WISCONSIN.

ANSWERS.—1. Yes, it will do to use the brood size frames in the super.

2. Unless you have hives containing more than 10 Langstroth frames in a story, you will have but little to extract from the sides of the brood nest. Give plenty of room, plenty of ventilation and plenty of shade and you will diminish the swarming tendency.

3. You will have less swarming with the production of extracted honey, all other things being equal. You must have a very good location for bees.

Queen-Cells

1. Please tell me how you can tell the difference between a ripe queen cell and a fresh one.

2. Can a queen cell be cut out of a brood frame and put in some other comb?

3. Will the bees accept such cells by shaking some bees on said comb by imprisoning the bees for 24 hours or so?

WISCONSIN.

ANSWERS.—1. A freshly sealed queen cell looks smooth. A ripe queen cell looks a little rough on the end, as the bees were anxious to see what is in it and meant to open it.

2. Yes, certainly. You must use a great deal of caution and cut around it far enough not to damage it. Use the same caution in inserting it. Nowadays queen cells are prepared artificially, so that they rarely need to be cut out of the comb.

3. Yes; but it would be better to put the cell on a comb of brood, in the most central part of it. Then put in bees enough to take good care of it. Be sure and have honey there, also.

Wintering

1. Will a strong, populous colony winter successfully in a 10-frame Danzenbaker brood chamber? The frames are 7½ inches deep. I have tar paper around the outside of the hive and they are kept in a fairly comfortable building.

2. I left a super of section honey over the

brood chamber. Do you think this is necessary, and will it cause a loss of too much heat?

3. Should the super be taken off before the bees are set out in the spring? IOWA.

ANSWERS.—1. Bees can be wintered successfully in almost any style of hive if they have enough stores. The Danzenbaker hive is very shallow, and that is against it, but with an upper story full of honey it is quite probable that they will have honey enough.

2. The super may cause loss of heat, but it is probably necessary for a honey supply.

3. Do not remove it unless the colony is weak and does not need the honey stored in it.

Beginning in City

1. How many hives should an inexperienced hand start with?

2. What time of the year should you start?

3. Can bees be raised in the city? OHIO.

ANSWERS.—1. If you have no knowledge of bees whatever, say 2 to 6 colonies, till you learn whether you can handle them.

2. The best time to get bees is in spring, during fruit bloom. Be sure the colonies have good queens and sufficient stores to carry them to the honey crop.

3. Yes. Chas. F. Muth kept an apiary in the heart of the city of Cincinnati and made some honey. Thos. G. Newman kept a number of colonies in Chicago. However, it is better to live in the outskirts of the city, if you wish to keep bees successfully.

Raising Queens—Foulbrood

1. Can bees be kept near chickens?

2. Explain how to go about raising queens.

3. What is meant by foulbrood? PENNSYLVANIA.

ANSWERS.—1. Bees may be kept in the same yard with chickens. But if the yard is very small it might be best to place the hives on a stand so that chickens will not annoy them or be annoyed by them.

2. It would take an entire number of the Journal to explain about queen-rearing. Send for "Practical Queen Rearing," or for "First Lessons in Beekeeping," and you will read the explanation of it.

3. Foulbrood is a contagious disease of the brood of bees. There are 2 varieties of it, called "European" and "American" foulbrood. You will also read about this in books on beekeeping.

Clover—Shipping Bees

1. How is the best way to get a start of white clover? The place where I intend to sow the clover is a large garden that was full of weeds. Is this a good place for the seed? I am a boy 16 years of age, and intend to start into the bee business the following year.

2. How many hives of bees would do for a beginner?

3. I have a neighbor that lives a quarter of a mile from me who has a few hives of bees. Do you think my bees would gather honey at that distance from home?

4. Do you think Indiana is too far to have bees shipped from Central Illinois?

ILLINOIS.

ANSWERS.—1. White clover will grow nicely in a garden, as anyone who has used horse manure in a garden can testify. Get seed and sow it. But usually there is enough clover in all the pastures in your vicinity.

2. From 2 to 6 colonies are best for a beginner. Have at least 2, for with only one you might have a little bad luck and get discouraged.

3. Bees go readily 2 miles from home to gather honey, but your neighbor's few hives will not interfere with yours.

4. Bees are shipped clear across the United States, but it would be best to buy your bees

as close to your home as possible, as shipping bees is expensive.

Increasing

I am thinking of making increase, and think I will use five hives in making them. I intend to make 20 new ones, and having five old ones the same strength as the others after dividing them, leaving the old queen on the old stand. The plan I intend to go by you will find enclosed.

On April 10 put old queen above with two frames of brood, with a zinc excluder between them, putting brood below and filling out with frames. On April 20 cut out all but one queen cell. That will give me laying queen May 5, leaving them together until the 25th, then divide.

I am going to use five hives for making twenty-five, using four to start them and using the last one for making queen cells for the others, giving queen cells and stuffing them in with grass, starting the last hive on May 15.

MISSOURI.

ANSWER.—I'm afraid your plan will not come up to your expectations, although I'm none too sure about the plan, as you first speak as though intending to have each colony start its own queen-cells, and later as though having one start cells for all. Perhaps the idea is to have four of them start each a cell for itself and the fifth rear one for itself and twenty extra that will be needed. As I understand it, you will put the queen above an excluder and expect cells to be started on the brood below the excluder. But you cannot rely upon it. Some of them will be pretty sure not to start a cell, and those that do start cells will start too few to make out the total number needed. Again, you will find that, as a rule, queens reared before about the usual time of swarming are not very valuable queens. If you have confidence in the plan, better try it upon one colony, and if it's successful you can call me down for giving poor advice.

Transferring

1. Some three years ago a swarm of bees settled in an inverted soap box and have staid there since. How can I now get them into an ordinary hive?

2. Will the bees settle down if placed over a hive fixed with frames and foundation combs?

OREGON.

ANSWERS.—1. If you place a hive with frames and foundation right over the box containing the colony, after having inverted the latter so that the two openings will come together, leaving off the bottom-board of the movable-frame hive, the bees will ascend into the upper hive as soon as the other box is full. This should not be done before spring, when there are flowers in the field. During the winter it would be worse than useless. If the queen does not move up into the upper combs, you may drive her up by smoking and drumming the lower hive. Better still would be to transfer the brood and bees by the methods recommended in "First Lessons," "Thousand Answers," or at still greater length in "Langstroth Revised."

2. The bees will go up into a hive much more readily than they will go down into it, everything else being equal. The heat ascends from a hive of bees, but does not go down, and in the spring they need heat for the brood.

Moths

I have no bees here, but I own several hundred colonies of bees in Greece and am much interested to learn the business properly. I had a letter from my father saying that my bees suffer from the moths. Those are the worst enemies we have. Our hives are all skeps, but as soon as I learn the business over here I propose to go back and put them in modern hives. I enclose money order for the Bee Journal and "Answers to Thousand Ques-

tions. What can I do to prevent the moths? ILLINOIS.

ANSWER.—The book which you have just ordered answers your question pretty thoroughly in pages 18-16, on "Beemoths." In a very few words we can say that moths are injurious only to weak and often to queenless colonies—never to strong hives of bees. Of course, in order to control your bees properly, you will need to transfer them from the "skeps" to regular movable-frame hives, for the advantages of the latter are that they enable you to take your hives apart just like a lot of toy building blocks, permitting you to perform any necessary operations.

Increasing

Would it be a good idea to make an increase in bees in spring, about the time they are ready to swarm? I haven't a good place for my bees to alight if they should swarm, and would not like to lose them. I intend to order my queens and divide my colonies which are about to swarm. TEXAS.

ANSWER.—Yes, if you don't want natural swarms and want increase, a good plan is to divide them. Perhaps the best way is to put the old hive in a new spot, leaving the queen with one brood and frames of foundation on the old spot. She will thus have all the field bees, and if you give the old colony a new queen it will be but a short time till both are in good shape for harvesting honey.

Extracted or Comb Honey

I am in a good location to sell honey to consumers, or retail it. Which do you think would be the most profitable for me to produce, extracted or comb honey? WASHINGTON.

ANSWER.—If you can sell extracted honey for two-thirds of the price of comb honey, it will pay better to produce that kind, for you can produce it for less than two-thirds the cost.

Cresote on Queens

Will bees occupy hives which have been dipped in cresote to preserve them, in place of painting? WYOMING.

ANSWER.—You can transfer a colony of bees, comb, brood, queen and bees into such a hive and have them stay, but it is very doubtful whether you can have a swarm into it and have them stay. Try it. I never did.

Hiving Two-Pound Packages

Last June I got 9 pounds bees and untested queen from Alabama. Never having had any experience myself with bees, I got a neighbor boy to put them in the hives. He took off the top and put them in on top of brood frames. They stuck around for three or four days and then flew away. Now what I wish to know is; exactly how to put bees purchased by the pound into a hive, and just how to release the queen. I wish someone would answer this in your Journal before next May. PENNSYLVANIA.

ANSWER.—Bees want a cavity, in the dark, for their home. So opening a hive and exposing its entire inside to the light of day is perhaps the least satisfactory way of getting them to go in and stay.

If the queen is caged separately from the bees, as is often the case, place her cage at the entrance of the hive, or, if the bottom-board is not fastened, place the cage on the bottom-board a short distance back of the entrance, so the bees may smell her odor from the entrance. Then place the cage containing the bees, open, with its opening in front of the hive entrance. If they hesitate to go in, you may shake a few of them so as to get them started. The whole swarm might be shaken in front after giving them a little syrup, so they will not be inclined to take wing.

A comb of brood, or even a dry comb, inside of the hive is a great inducement for them to go in. Of course, after the bees have gone in, the queen should be released among them.

The hiving of bees by the pound is really the hiving of a swarm. What is suitable in the one case is usually suitable in the other.

Getting a Start

1. How had I best work, with one big colony, for next spring's run, beginning all over again? My idea was to buy an old colony for wintering, give careful early feeding in spring and introduce an Italian queen as early as temperature will permit.

2. Could I transfer them in spring to a modern Jumbo hive and at the same time supplement them with a pound of bees? WISCONSIN.

ANSWERS.—1. This should have been answered sooner. If you have bought a big colony for winter, it should have enough honey to winter, especially if you place the hive in the cellar. If they do not have enough food, when spring comes, you may give them some warm syrup, from time to time. As to introducing an Italian queen as soon as temperature will permit, it is all right. But be sure you have the Italian queen, alive, on hand, before destroying the old queen.

2. If you desire it, the colony may be transferred to a Jumbo hive during fruit bloom. But unless they are very weak it will hardly do to buy a pound of bees to give them. There is always more or less danger of fighting, when uniting bees, and a pound of strange bees, fatigued from a long trip, would not do much good. It might pay better to buy that pound of bees and that queen in spring and start a new colony with them.

Queen Find Hive—Clean up Frames—Drones

1. If a queen bee drops on the ground from a comb, will she find her own hive?

2. Will it incite the bees to robbery if we raise the hive one inch in hot weather?

3. Is it proper, after extracting, to put the comb out to the bees to clean up?

4. I had two colonies go wrong last summer. They all turned to small drones. Do you think they had a laying worker-bee? I could not find any queen. What should I do in such a case?

5. When bees are put in hives that have dead sealed brood, will they clean out dead brood? BEGINNER.

ANSWERS.—1. The queen is rather helpless in finding her home, when she happens to drop on the ground, for the only time she has taken flight was when she went out to mate, or perhaps when she went out with the swarm. Besides, she is usually heavy with eggs and flies with difficulty. Usually when she drops to the ground some of her bees find her and care for her. But I should be very careful to see that she was home safe.

2. If we raise the hive in hot weather when it is overflowing with bees (and there is no need to do it at other times) there will be no danger of robbing.

3. Practical men are not all agreed upon the course to pursue. If the combs are put out, when all is quiet, far enough from any hive to avoid inducing robbing of a nearby colony afterwards, there will be no trouble, though it certainly induces bees to seek easy spoils. But the worst part of it is that you may feed your neighbors' bees as well as yours. The other way is to put the supers on strong colonies, a little after sunset.

4. These colonies either became queenless and had drone-laying workers, or their queens were drone-layers. Such colonies had best be united with stronger ones, for they are of no value.

5. Better cut out the dead brood, although they usually clean it out. There is always a doubt lurking about dead brood. It is carrion, at best.

Saltpeter—Carniolans—Finding Queen

1. What do you know of the use of saltpeter in bee culture?

2. I have had pure Carniolan bees for 20 years and found them better than Italians and blacks. What is the reason they are not more advertised in the American Bee Journal?

3. I wonder that Doctor Miller does not know of a trick to find the queen in a colony, but have you ever heard of knocking on one side or the other of the beehive to oblige the queen to come onto that side, so as not to have to look on all frames to find the queen?

MONTANA.

ANSWERS.—1. Nothing, except that it is often used for soaking rags to light easily for use in the smoker.

2. Probably for the reason that we have not retained them ourselves, that it is difficult to ascertain when there is hybridization of those bees with the common black, as they are very similar in color. With the Italians, the least admixture of other blood shows readily. The Carniolans are also faulty in being too prone to swarm excessively.

3. Knocking on a honey-board at the top of the brood chamber often attracts the queen and a number of bees there. But when it fails, it usually disturbs the bees so as to make the queen more difficult to find afterwards. The same might be said of knocking on one side or the other of the hive body.

**The Illinois State Association**

After 29 years of active service as Secretary of the State Association, Jas. A. Stone, one of the oldest members, relinquished his office. G. M. Withrow, a young beekeeper of ability, was elected in Mr. Stone's place. We understand that his office is at Mechanicsburg, Ill.

The December meeting was as interesting as usual. The President, Dr. A. C. Baxter, was elected as a delegate to the January meeting of the National Association, to be held in Kansas City.

Eastern Beemen Meet

A well-attended meeting of the Hampshire, Hampden & Franklin Beekeepers' Association was held in the Chamber of Commerce, Springfield, Mass., on Saturday afternoon, December 6, 1919. Mr. C. H. Taber, of Holyoke, Mass., was elected President, vice A. C. Andrews, resigned. Mr. F. H. Sanborn, of Chicopee, Mass., was elected to succeed Mr. Taber as Vice President, and Mr. H. C. Taber, of Ware, Mass., was elected a Vice President to fill a vacancy. The meeting was addressed by Dr. Burton N. Gates, of the Massachusetts State Department of Agriculture, who had for his subject "Wintering in the Emergency."

S. E. HOXIE, Sec'y.

Wisconsin

At the Wisconsin State Beekeepers' meeting, held December 3, 4 and 5, at Madison, it was reported that the Association is now composed of 543 members; that there are 30 local associations in the State, 17 of which are affiliated with the State Association and 9 of which had representatives at the meeting. It was also stated that the total attendance at the 49 meetings of beekeepers within the State, during 1919, was 1453.

The officers for the year 1920 are: President, Gus Dittmer; Vice President, J. E. Cooke; Secretary, H. F. Wilson; Treasurer, A. C. Allen.

Considering their population, Wisconsin and Minnesota lead the Unit-

ed States in beekeepers' associations. Let us imitate them.

Short Course at Ithaca, N. Y.

The New York State College of Agriculture in Ithaca, N. Y., in cooperation with the Bureau of Entomology, Washington, D. C., will give a Short Course in commercial beekeeping during the week of February 23, 1920. This course will be similar to the one given last year, with some important new features added. One hundred and forty-nine beekeepers, many of them among the most extensive in the State, stayed through the entire week and passed a resolution asking for the course again. The indications are that the attendance this year will be more than double that of last year. No tuition fee is charged. All beekeepers are welcome and those wishing to attend are asked to write to George H. Rea, Extension Specialist in Apiculture, College of Agriculture, Ithaca, N. Y., at once and have their names registered for this course. An attempt will be made to secure rooms for all who register in time and who desire a reservation.

Chicago Northwestern Meeting

The Chicago Northwestern Beekeepers' Association met in the Rose Room of the Great Northern Hotel, Chicago, on Monday and Tuesday, December 15 to 16. The meeting was presided over by E. S. Miller and a very pleasant and profitable session was held.

Although the crowd was not large, it was very enthusiastic, and the Question Box was one of the chief features. A very interesting talk was given on "Is Beekeeping an Industry, or a Side Line?" by B. F. Kindig, President of the National Beekeepers' Association. Mr. Kindig had statistics to show that the larger beekeeper in Michigan who now has from 100 to 400 colonies derives a good return from his bees. His statistics showed that the smaller the beekeeper the less gross profit he seemed to get from his bees. Mr. Kindig also made a plea for sending a delegate to the coming National Convention at Kansas City, and

President E. S. Miller was elected as delegate. Other topics were headed by papers read by Mr. C. P. Dandant, editor of the American Bee Journal, on "Large Hives," and by Iona Fowls, of Gleanings in Bee Culture, on "Selling Honey."

E. S. Miller was re-elected President and John C. Bull Secretary-Treasurer. C. O. Smith, of Chicago, was elected Vice President.

Big Hives

Keep boosting the big hives. I have 45 now and will have that many more for next spring. It was a poor year for honey here, but my bees made an average of 65 pounds per colony. I use the standard hive for supers, without excluder, and did not get a cell of brood in any of them.

Minnesota.

Beware of the Aloe

As proof of the fact that beekeeping has not yet become a science in this country, I may mention that a beekeeper in the Eastern Province, who runs a fairly large apiary as a side line, and whose products are sold on the Johannesburg market, this year has done himself incalculable harm, for the honey sent up has been flavored with the nectar from the red poker aloe, and the "eater" of the honey found himself with a throat, which burned like fire, according to the amount of honey eaten. Had he been a practical beekeeper and had studied his flows, he would have arranged the supers in his hives so that when the nectar flowed—and the supplies from this wild aloe are large—this particular flow would have been kept for winter feeding, instead of being placed on the Johannesburg market to the detriment of his reputation.—The South African Poultry Magazine.

Experience With Foulbrood

My bees had foulbrood and I lost twenty stands because I did not know how to handle them. I bought a book which directed that they be shaken. I waited till the bees were working well on linden and there was plenty of new honey. I shook the strong colonies into new hives and doubled the weak ones, shaking two into one hive. I thus saved 25 stands and they stored 50 to 75 pounds of surplus per colony. I used all my old hives, first cleaning out all the old combs and scorching out the hives. None of the colonies shaken during the flow have since shown the disease again. Some that I shook in May when there was no honey in the field, required feeding and soon had the disease again.

When I undertook to clean up the disease, one could smell it 100 yards and I had no faith that I could save any of the bees. I have \$200 worth of honey when I would not have taken any if the bees had not been treated.

Illinois.

A. D. SEARS.

West Virginia Meeting in March
The Panhandle Beekeepers' Association will hold its 28th annual spring meeting at the Market Auditorium, in Wheeling, on Wednesday, March 10, 1920.

CLASSIFIED DEPARTMENT.

Advertisements in this department will be inserted for three cents per word, with no discounts. No classified advertisements accepted for less than 35 cents. Count each initial or number as one word.

Copy for this department must reach us not later than the 20th of the month preceding date of issue. If intended for classified department it should be so stated when advertisement is sent.

BEEES AND QUEENS

FOR SALE—200 three-frame nuclei with Italian queens. These nuclei contain three solid frames of capped brood; delivered 1st of May; one-half down, balance just before delivery. Irish Bros., Doctortown, Ga.

"QUALITY" THREE-BANDED ITALIANS from excellent stock; untested queens, 1, \$1.50; 6 for \$7.50; 12 for \$13.50; 50 for \$55; 100 for \$100. N. J. James, 1185 Bird Ave., San Jose, Calif.

FOR SALE—140 colonies of Italian bees in 10-frame Root hives, well made, painted and in first-class shape. No disease. Ill health reason for selling. Dexter & Knapp, Mound, Minn.

ITALIAN BEES (the kind that fill from 3 to 6 supers), for sale, in new 8 and 10-frame Root hives, at \$12 and \$15 per colony, if ordered soon. Bees to be shipped by express in April. Queens after May 1. Miss Lulu Goodwin, Mankato, Minn.

FOR SALE—Italian queens from some of the best stock in the United States, mailed as soon as hatched. Safe arrival guaranteed to any part of the United States and Canada. All queens mailed in improved safety introducing cages. Order early. Send for circular. Prices, April to October 1, 75c; 10, 86c; 50, \$27.50. James. McKee, Riverside, Calif.

1920 PRICES on nuclei and queens, Miller strain. Queens, untested, \$1.50 each, \$15 per doz.; tested, \$2.00 each, \$22 per doz. One-frame nuclei, \$3; two-frame, \$5; three-frame \$6.50, without queens, f. o. b. Mason, Miss. Five per cent discount in lots of 25 or more. We have never had any bee or brood disease here. Will have no queens except with nuclei, until June 1. Safe arrival and satisfaction guaranteed. Geo. A. Hummer & Sons Prairie Point, Miss.

FOR SALE—210 colonies Italian bees in 8-frame hives, with 100 supers and 100 shipping cages, at a bargain. C. H. Cobb, Belleville, Ark.

THAGARD'S STRAIN Italian queens, catalog free. See larger ad elsewhere. V. R. Thagard, Greenville, Ala.

HARDY Italian queens No bees W. G. Lauver, Middletown, Pa.

FOR SALE—350 colonies Italian bees in Monroe and Baldwin Counties, Alabama, in 10-frame Langstroth hives, Hoffman frames. Plenty supers and supplies for this year. No disease. One 6-frame Root automatic extractor and other fixtures; extra good range. Reason for selling, am crippled and not able to attend to them. Come look it over. A bargain for cash. W. H. Owens, 58 S. Conception St., Mobile, Ala.

1920 PRICES for "She Suits Me" queens. Untested Italian queen, from May 15 to June 15, \$1.50 each. After June 15, \$1.30 each; \$12.50 for ten; \$11.00 each for 25 or more. Allen Latham, Norwichtown, Conn.

ITALIAN QUEENS OF WINDMERE will be ready in May. Untested, \$1.25 each; six for \$7. Tested, \$2 each; select tested, \$2.50. Write for quotation on nuclei. Now booking orders. Prof. W. A. Matheny, Ohio University, Athens, Ohio.

FOR SALE—I will book orders for a limited amount for 3-banded Italian bees in 8-frame hives. All queens sent out in May are 1919 tested. Safe delivery guaranteed on journey within 48 hours. Begin shipping May 20.

Full colony with tested breeding queen, \$18.
Full colony with tested utility stock, \$16.
3-frame nucleus tested breeding queen, \$8.75.
3-frame nucleus tested utility stock, \$6.75.
2-frame nucleus tested breeding queen, \$7.50.
2-frame nucleus tested utility stock, \$5.50.

June and July Delivery:—

1-lb. package bees with untested queen, June, \$4; July, \$3.50.

2-lb. package bees with untested queen, June, \$6.50; July, \$5.50.

2-frame nucleus with untested queen, June, \$6; July, \$5.

3-frame nucleus with untested queen, June, \$7.50; July, \$6.50.

Tested breeding queens, \$5 each. Tested queens, \$3 each. Untested queens, \$1.50 each, or 6 for \$8.

Terms, 10 per cent with order, balance first of month shipped in; or 5 per cent discount for cash with order. Catalog ready about Feb. 15, free.

J. W. Bittenbender, Knoxville, Iowa.

FOR SALE—Leather colored Italian queens, tested, June 1, \$1.50; untested, \$1.25; \$13 a dozen. Root's goods at Root's prices. A. W. Yates, 15 Chapman St., Hartford, Conn.

IT'S MARCHANT'S STRAIN that does the work, that's all. See ad elsewhere. A. B. Marchant, Jesup, Ga.

FOR SALE—After April 15, our golden Italian queens, untested, one \$1.50 or \$15 per doz.; select untested, one, \$1.75 or \$18 per doz.; tested, \$3 each. Safe arrival guaranteed. Tillery Bros., R. 5, Georgiana, Ala.

FOR SALE—Goldens that are true to name. Select untested, one, \$1.50; six, \$7.50; 12, \$12.50; 50, \$55; 100, \$100. Garden City Apiaries, San Jose, Calif.

FOR SALE—Golden and three-band queens. Untested, April, May and June delivery, \$1.25 each; \$13.50 per doz. Satisfaction. R. O. Cox, Rt. 4, Greenville, Ala.

FOR SALE—Pure 3-band Italian queens, as good as you can buy with money. Write for prices. J. F. Diemer, Liberty, Mo.

BEEES BY THE POUND, ALSO QUEENS—Booking orders now. Free circular gives prices, etc. See larger ad elsewhere. Nueces County Apiaries, Calallen, Texas, E. B. Ault, Prop.

BEEES AND QUEENS from my New Jersey apiary. J. H. M. Cook, 1A1f 84 Cortland St., New York City.

HONEY AND BEESWAX

FOR SALE—Buckwheat honey, 15c; amber honey, 18 to 22c; clover, 22 to 25c; bulk comb, 23 to 25c, owing to amount wanted. W. H. Hyde, New Canton, Ill.

FOR SALE—1,000 lbs of honey. E. Keister, Orangeville, Ill.

FOR SALE—Clover and buckwheat honey in any style container (glass or tin). Let us quote you. The Deroy Taylor Co., Newark, N. Y.

FOR SALE—Choice "Kentucky" clover extracted honey. Well ripened, thick and rich. Perfectly clean and suitable for table use. Packed in 60-lb. tins, two in a case, at 24½c f. o. b. H. C. Lee, Brooksville, Ky.

WANTED—Comb. extracted honey and beeswax. R. A. Burnett & Co., 6A1st 178 S. Water St. Chicago, Ill.

FOR SALE—New crop clover extracted honey, two 60-pound cans to case, 25c per pound. Buckwheat and clover mixed, about half and half, 30c per pound. H. G. Quirin, Bellevue, Ohio.

WE BUY HONEY AND BEESWAX—Give us your best price d-livered New York. On comb honey state quantity, quality, size, weight per section and sections to a case. Extracted honey, quantity, quality, how packed, and send samples. Chas. Israel Bros. Co., 486 Canal St., New York, N. Y.

WANTED—Honey in 10-lb cans. Lang, 1609 Dayton St., Chicago.

WANTED—White clover or light extracted honey. Send sample; state how honey is put up and lowest cash price delivered at Monroe; also buy beeswax. E. B. Rosa, Monroe, Wis.

OUR CROP OF HONEY is now ready for shipment. It is a good grade white clover with a very small trace of basswood, almost water white. It is put up in new 60-lb. tin cans, two to the case. This honey was all produced by ourselves above queen-excluders, in nice white combs. Then combs were provided so that no honey was taken off until after the season, when it was thoroughly cured by the bees. It costs more to raise a crop of honey this way, as we do not get as much per colony, so we have to have a little more money for this fancy article than the ordinary honey on the market. Try a small order and we feel sure you will buy no other. We can furnish at the following prices, f. o. b. Northstar: one 60-lb. can \$15.50; in cases of two cans, \$30 a case, in any sized orders. The crop is short this year and will not last long at these prices. We feel quite sure that the price will not be any lower, so do not be disappointed by not ordering early if you are looking for honey as good as money can buy. D. R. Townsend, Northstar, Mich.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendering. Fred W. Muth Co., 204 Walnut St., Cincinnati, Ohio.

FOR SALE

FOR SALE—Two No. 17 extractors, \$25 each; 100 zinc excluders, 10-frame, 25c, 8-frame 20c each; one 60-gallon honey tank, galvanized, \$70; one Dadant style uncapping can, \$6; one 10-in. foundation mill, \$30; 265 10-frame Ideal supers, rabited corners, 30c each, with frames 40c. Want a Herschiser wax press. Also have 200 nuclei for sale. See large add. C. S. Engle, Beaville, Texas.

GIANT SPIDER FLOWER—Great honey plant. Seed 10 cents per sample pkt. S. W. Terhune, Wortendyke, N. J.

FOR SALE—5-gal. cans; used, but scarcely look it. New corks. Buy now while offered. Cases of two, \$1. Bruner, 3836 N. Kostner Ave., Chicago, Ill.

FOR SALE—200 supers for 8-frame hives, about 50 for 1½, 150 for plain sections, with fence A1 for 4¼x4¼ sections. All factory made, some mitered at corners; all about as good as new. All new sections and started with 2 in. foundation, \$1 each in lots of 10 or more. J. W. Bittenbender, Knoxville, Ia.

NO 7 Remington Typewriter, perfect condition, to exchange for honey extractor or buzz saw. E. W. Brown, Willow Springs, Ill.

FOR SALE OR EXCHANGE—Have some splendid bred-to-lay White Leghorn hens that I will sell at \$2 each, or exchange for bees. Mrs. Etta E. Deabler, Kountze, Texas.

FOR SALE—21 hives bees in 10-frame hives, 1 No. 5 extractor, 300 extracting frames and combs, with supers. C. G. Strieder, Brimfield, Ill.

OLD-TIME BEE BOOKS—50 to 250 years old. Every beekeeper should own at least one. Send for price list. John E. Miller, 114 East 27th St., New York City.

FOR SALE—Cameras and Telephoto lenses. If interested in bargains, write me. H. E. Roth, Denver, Iowa.

FOR SALE—Cedar or pine dovetailed hives; also full line of supplies, including Dadant's foundation. Write for catalog. A. E. Burdick, Sunnyside, Wash.

FOR SALE—"Superior" Foundation (Weed process). Quality and service unexcelled. Superior Honey Co., Ogden, Utah.

800 LANGSTROTH FRAMES, flat, 5c each. Extractor wanted. Lorenzo Clark, Winona, Minn.

TO BEEKEEPERS that ship pound packages: I am acquainted with your troubles. It's early queens you need. I can fill your orders. A. B. Marchant, Jesup, Ga.

WANTED

WANTED—Italian bees in 10-frame hives. Thos. Cordner, Rt. 7, Sparta, Wis.

WANT to buy some Italian bees, full colonies in 10-frame Hoffman; also pump shotgun. James Wheeler, Maroa, Ill.

WOULD LIKE to hear from owner of small farm which is for sale. Wisconsin, Minnesota, Iowa or Illinois preferred. Do not want sand or swamp land. A. Runge, Elizabeth, Ill.

WANTED—Your old combs, cappings and slumgum to render into beeswax. We get enough more wax with our well equipped presses to pay for our work. Dadant & Sons, Hamilton, Ill.

WANTED—Circular saw table, combination preferred. What have you? Ed. Swenson, Spring Valley, Minn.

WANTED—To buy two or more colonies near Chicago. John Stettka, 1001 W. 16th St., Chicago, Ill.

WANTED—200 or less colonies of bees (any style hive) for spring delivery. Address. A. W. Smith, Birmingham, Mich.

WANTED—About 100 colonies to work on shares in Wisconsin, with or without option to purchase location, by apiarist with 100 colonies of his own. Winter address: E. W. Brown, Willow Springs, Ill.

WANTED—To buy bees free from disease, for April delivery, in southeastern Minnesota or western Wisconsin. State how many, kind of hives and price. P. B. Ramer, Harmony, Minn.

WANTED—For exhibition purposes, naturally built combs, partly or fully drawn out. Such combs should not have over 25 per cent drone-comb and should be the product of the bees themselves, without use of foundation. Write us describing what you have and we will name our price on same. American Bee Journal, Hamilton, Ill.

WANTED—Your order for "Superior" Foundation. Prompt shipments at right prices. Superior Honey Co., Ogden, Utah.

SUPPLIES

FOR SALE—New cypress hives, reversible bottom-boards, telescope metal covers, self-spacing frames, of quality and price that will please you. Manufactured by myself. Write for particulars. O. L. Rothwell, Gillett, Pa.

FOR SALE—Buckwheat extracted honey in 60-lb. cans, 2 cans per case. Bert Smith, Romulus, N. Y.

FOR SALE—Brood frames, hive bodies, covers and bottoms. Write for prices and particulars. I can save you money, as we make them here, where lumber is reasonable in price. F. D. Bowers, Sugar Grove, Ia.

SEND us a list of goods wanted and will quote you lowest prices. We are the money-saving house. Price list free. Try us. H. S. Doby & Son, St. Anne, Ill.

FOR SALE—New and second-hand equipment. 400 comb honey supers $4\frac{1}{2} \times 4\frac{1}{4} \times 1\frac{1}{4}$ —10-frame; 2-frame extractor; 100 shallow extracting supers, 10-frame; Bartlett-Miller capping melter; 5 Dadant hives with 1 extracting super; Root capping melter; 100 8-frame hives, complete; 1 steam knife with generator; 100 8-frame hive covers, Excelsior; 150 fences, $4\frac{1}{4}$ sections; 100 8-frame hive bottoms; 2 Standard smokers; 3 Junior smokers; 400 Hoffman frames, new; 500 metal spaced frames, new; 1,000 pounds Superior medium brood foundation; 67 pounds Dadant's medium brood foundation $4\frac{1}{2} \times 10\frac{1}{2}$; 16 10-frame hive bodies, new. All good, used but one season, and some never unpacked. Write for prices on what you want. Sunnyside Apiaries, Fromberg, Mont.

FOR SALE—Good second-hand 60-lb cans, two to the case; used only once, 60c per case, cash with order. E. B. Rosa, Monroe, Wis.

FOR SALE—1,000 Standard bee hives in flat 8 and 10-frame sizes; supers with sections; full depth and shallow extracting-frames. Entire lot new and strictly first-class. We will sell in large or small quantities at low prices. The Stover Apiaries, Helena, Ga.

FOR SALE CHEAP—Ninety 8-frame dovetailed hives, mostly Root make, used one year. Absolutely free from disease. Expect to change my bees from 8 to 10-frame hives in March. Write, H. L. Edmonds, Bessemer, Ala.

I MANUFACTURE cypress bee hives, and sell Lewis' beeware. Write for booklet. J. Tom White, Dublin, Ga.

SITUATIONS

WANTED—One experienced bee-man. Must understand outapiary work for comb and extracted honey and the handling of motor trucks. Write full particulars, experience, reference, age and salary wanted, in first letter. I can also use one helper. Can give permanent employment to the right men. W. J. Stahmann, Clint, Texas.

WANTED—Queen breeder for 1920 season. State experience and salary expected. Also need helper. M. C. Berry & Co., Hayneville, Ala.

WANTED—Man for season of 1920 to work with bees. State age, experience and wages. We furnish board. Opportunity for permanent situation to right man. Also want man to work in shop, put up honey and do general shop work and make deliveries. The Rocky Mountain Bee Co., Box 1319, Billings, Mont.

WANTED—The Boulder Apiaries, one of the largest and most modern and up-to-date extracted honey producers in the West, wants 2 experienced bee-men for the season of 1920. State all particulars in first letter. E. A. Knemeyer, 2328 South St., Boulder Colo.

WANTED—Will give experience and fair wage to active young man not afraid of work, for help in large, well-equipped set of apiaries for season starting in April. State present occupation, weight, height, age and beekeeping experience, if any. Morley Pettit, The Pettit Apiaries, Georgetown, Ont.

BEE STUDENT wants position in apiary one year, beginning February, in Idaho, Washington or Oregon. State wage. Address J. W. Hacker, College Station, Pullman, Wash.

WANTED—One experienced man and students, as helpers with our 1,000 colonies. Best opportunity to learn the business from A to Z, in the actual production of carloads of honey; theory also. Write immediately, giving age, height, weight, habits, former employment, experience, references, wages, photo, all in first letter.

E. F. Atwater, Meridian, Idaho. Former Special Field Agent in Beekeeping, U. S. Dept. Agr., for California, Arizona and New Mexico.

WANTED—Good bee-man to run 500 colonies bees for extracted honey during coming season. Give references, salary expected and experience in first letter.

Dr. D. W. Gibson, Beaver, Utah.

WANTED—Young married man, ex-soldier, experienced honey producer, wants to take up work with some up-to-date and growing bee business. Best of qualifications and references. Would expect to buy an interest in business if satisfactory. Closson Scott, 900 Parkman St., Warren, Ohio.

WANTED—One or two good queen-rearing men to begin work February 15, 1920. Nueces County Apiaries, Calallen, Texas.

MISCELLANEOUS

WANTED—Beeswax, old combs and cappings to render on shares. Will pay highest market price and buy your share of the beeswax. F. J. Rettig & Sons, Wabash, Ind.

IF you want early queens, send in your order now; don't wait till it's too late. A. B. Marchant, Jesup, Ga.

WRITE for shipping tags and our prices for rendering your old combs, cappings, etc. We guarantee a first-class job. The Deroy Taylor Co., Newark, N. Y.



ITALIAN QUEENS



The Old Reliable Three-Banded Italians. The best allround bee to be had. Queens ready to mail April 1. Will book orders now. Will guarantee safe arrival in United States and Canada. Prices for April and May:

Untested, \$1.50; 6, \$8; 12, \$15

Tested, \$2.25; 6, \$12; 12, \$22.

Select tested, \$3 each.

Descriptive circular and price list free.

JOHN G. MILLER, 723 C Street, Corpus Christi, Texas.

AM BOOKING ORDERS

now for 1920 queens. Untested, \$1.50 each; 25 or more, \$1.35. Tested, \$2.50 each; 25 or more, \$2.25. Select tested, each, \$3.

Limited amount of bees for early shipment. My descriptive circular tells about it. Write me your needs.

R. V. STEARNS
BRADY, TEXAS

BEEKEEPERS' SUPPLIES—QUALITY AND SERVICE

Now is the time to order your season's supply of Bee Material so as to have them ready for the honey flow. For lack of hives and other goods, you cannot afford to let your bees fly away, bees are valuable. We have everything required for practical beekeeping. Our goods for ideal of quality, quality of workmanship. Our 1920 catalog is now ready to send out, send for one, it is full of good stuff.

AUGUST LOTZ CO., Boyd, Wis.

TENNESSEE-BRED QUEENS

Forty-Eight Years' Experience in Queen-Rearing

Breed Three-Band Italians Only

PRICES OF QUEENS

	Nov. 1st to June 1st			June 1st to July 1st			July 1st to Nov. 1st		
	1	6	12	1	6	12	1	6	12
Untested.....	\$2.00	\$ 9.00	\$16.80	\$1.50	\$ 8.00	\$14.50	\$1.30	\$ 7.50	\$13.50
Select Untested.....	2.25	10.50	18.00	2.00	9.50	16.00	1.75	8.50	15.00
Tested.....	3.00	16.50	30.00	2.50	12.00	22.00	2.00	10.00	18.50
Select Tested.....	3.50	19.50	36.00	3.00	16.50	30.00	2.75	15.00	27.00

Select queens tested for breeding, \$5.

The very best queens, tested for breeding, \$10.

Queens for export will be carefully packed in long distance cases, but safe delivery is not guaranteed. I sell no bees by the pound, or nuclei, except with high-priced breeding queens. Capacity of yard, 8,000.

JOHN M. DAVIS, Spring Hill, Tenn.

Importer and breeder of three-band Italian Queen Bees.

Depot and express offices, Ewell Station, on L. & N. R. R.

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We manufacture millions of sections every year that are as good as the best. The **cheapest** for the **quality**; **best** for the price. If you buy them once, you will buy again.

We also manufacture hives, brood-frames, section holders and shipping cases.

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BEST GOLDEN ITALIANS

BEN G. DAVIS, SPRING HILL TENN.

Write for Price List and Booklet descriptive of

HIGH-GRADE Italian Queens

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For Pleasure and Profit. This Book tells all about How to Select, Breed and Manage Rabbit and Belgian Hare for pleasure or profit; When to Feed; Diseases and their Remedies. Breeding of rabbits is profitable. Illustrated. Price 10c prepaid.

Belgian Hares and Flemish Giant Rabbits for sale, guaranteed American stock. Send for prices. Forest Glen Rabbitry, 5222 Liano Ave., Chicago.

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Pheasant Eye Beans. New bush stringless—35 day Beans, Hot Squash Peppers. Carrots sweet enough for Pies. New Narrow Grain Sugar Corn. Also Red Skin Dent corn, shock it in 70 days. Write for complete Seed Catalog No. 22

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Think of it—30 packets of Olds' "Wisconsin Standards," seeds of highest germinating quality, worth \$2.00, for \$1.00.

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Stringless Gr. Pod Beans . . .10	Ex. Lge. Red Weth. Onion . .10
Pencil Pod Wax Beans . . .10	Southport Wh. Globe Onion .10
Imp. Blood Turnip Beet . . .05	Fine Double Curled Parsley .05
Crosby's Egyptian Beet . . .05	Imp. Guernsey Parsnip . . .05
Ey. Jer. Wakefield Cabbage .10	Best Extra Early Peas . . .10
Onheart Carrot . . .05	English Wonder Peas . . .10
Golden Bantam Sweet Corn .10	Ruby King Pepper . . .05
Ey. Evergreen Sweet Corn .10	Quaker Pie Pumpkin . . .05
Early Fortune Cucumber . .05	Imp. Fr. Breakfast Radish . .05
Sel. White Spine Cucumber .05	Crimson Giant Radish . . .05
Earliest Forcing Lettuce . .05	White Icicle Radish . . .05
Early Prize Head Lettuce . .05	Bloomsdale Spinach . . .05
Select Osage Muskmelon . .05	True Hubbard Squash . . .05
Tom Watson Watermelon . .05	Spark's Earliana Tomato . .05
Yel. Globe Danvers Onion .10	Pur. Top Wh. Globe Turnip .05

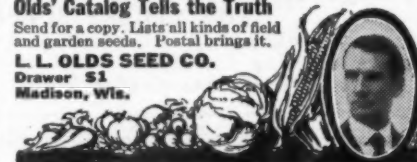
Entire Collection Only \$1.00

Olds' Catalog Tells the Truth

Send for a copy. Lists all kinds of field and garden seeds. Postal brings it.

L. L. OLDS SEED CO.

Drawer 51
Madison, Wis.



PAINT WITHOUT OIL

Remarkable Discovery That Cuts Down the Cost of Paint Seventy-Five Per Cent.

A Free Trial Package is Mailed to Everyone Who Writes.

A. L. Rice, a prominent manufacturer of Adams, N. Y., has discovered a process of making a new kind of paint without the use of oil. He calls it Powderpaint. It comes in the form of a dry powder, and all that is required is cold water to make a paint weather proof, fire proof, sanitary and durable for outside or inside painting. It is the cement principle applied to paint. It adheres to any surface, wood, stone, or brick; spreads and looks like oil paint, and costs about one-fourth as much.

Write to Mr. A. L. Rice, Manufacturer, 23 North Street, Adams, N. Y., and he will send you a free trial package, also color card and full information showing you how you can save a good many dollars. Write today.

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For sale by all dealers. If no dealer, write factory
R. & E. C. PORTER, MFRS.
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(Please mention Am. Bee Journal when writing)

BEES

We furnish full colonies of Italian bees in double-walled hives, single-walled hives, shipping boxes and 3-frame nucleus colonies.

I. J. STRINGHAM, Glen Cove, N. Y.
NASSAU, CO.

Crop and Market Report

Compiled by M. G. Dadant

The local demand from the consumer, for honey, continues strong. Most small beekeepers have cleaned up their supply of honey and are buying outside to supply their customers for the balance of the season.

One of the largest honey bottlers has withdrawn from the market, having enough honey to supply his trade for the balance of the season. Another is still buying to some extent.

The foreign demand has not been as active as early in the fall. The rate of exchange to most foreign countries is so great as to make the cost very high. It is also evident that considerable honey was shipped abroad earlier without a definite market, so that in some instances honey is quoted lower in Liverpool than it could be bought for in California.

THE VISIBLE SUPPLY

Considerable honey still remains in the hands of producers awaiting a market. Most of the Colorado crop is sold and Texas has cleaned up all stocks through its

association. The California Association still has some on hand, and there is also some honey in the southeast awaiting a market.

There should be no difficulty, however, in placing the balance of the 1919 crop before the new honey begins coming in.

PRICES

California honey brokers quote an advance of from one to two cents a pound on honey, showing a stiffening of the market. Best white honey is now bringing 19 to 20 cents f. o. b. California common points.

The price of sugar in the east brings it almost on a level with honey. In fact one New York paper is disposing of a car of honey to its subscribers, in original packages at 23 cents, which was the same price as sugar.

CONCLUSION

It appears as if the crop would all move at present prices, with a possibility of a slightly rising market till the new crop is available.

TWO NEW BEE BOOKS

We have just completed publication of two new bee books, special in their field, and for which there has been insistent demand

AMERICAN HONEY PLANTS

Including those important to the beekeeper as sources of pollen

By FRANK C. PELLETT

This book is the result of many years of personal investigation and travel from New England to California and from Canada to Florida and Texas to secure first-hand information on the sources of nectar and pollen. It is splendidly illustrated with 156 photographs, and describes the honey plants of all parts of America. A list of the honey plants of each State is given separately and the plants described in alphabetical order.

A knowledge of the flora is important to every beekeeper, as it is often possible to double the crop by moving an apiary but a few miles. This book is written by an expert beekeeper and a competent observer, only after having visited apiaries in most of the important honey-producing districts. 300 large 8vo pages. Enameled paper. Price \$2.50.

OUTAPIARIES

By M. G. DADANT

The development of beekeeping has been in direct relation to the extension of outyards in most localities. The Dadant family has kept bees extensively in the same locality for three generations and the author of this book has spent his life in commercial honey production.

The book deals with the business of beekeeping on a large scale, and describes the methods and practice of the most successful beemen. Special chapters on honey houses and equipment, autos and trucks and similar apparatus required by the extensive honey producer.

125 pages, 50 illustrations. Price \$1.

Add 75 cents to the price of either of the above books and get the book and the American Bee Journal for a full year.

AMERICAN BEE JOURNAL, Hamilton, Illinois

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THAT RESOLUTION OF YOURS—Is It Still Good?

Don't you remember the year you got caught without having enough hives, sections and foundation when you thought you did? Surely you aren't going to get caught this year. Make the most of your time before the rush begins by ordering those "Falcon" supplies. This gives you a fine opportunity to get them nailed and painted so that they can be put to immediate use in the spring.

Time and again it is proven that a **SATISFIED CUSTOMER IS OUR BEST ADVERTISEMENT.**

A postal will bring our catalog, order blank and return envelope to your address.

RED CATALOG, postpaid.

"Simplified Beekeeping" postpaid.

Dealers everywhere.

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QUEENS, SELECT THREE-BANDED ITALIANS

Reared from the best mothers and mated to select drones.

Prices for May and June:

	One.	Six.	Twelve.
Untested	\$2.00	\$ 9.00	\$16.80
Select untested	2.25	10.50	18.80
Select tested	3.50	19.50	35.00

Orders booked now for May delivery, one-fourth down, balance to be paid before queens are shipped. Pure mating, safe arrival and entire satisfaction guaranteed. Wings clipped free.

HARDIN S. FOSTER, Columbia, Tenn.

BEE SUPPLIES

FALCON LINE

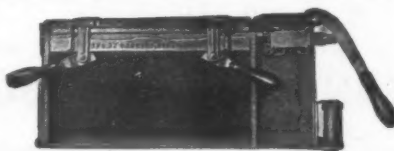
Best goods made. Get our big discount sheet before buying.

C. C. CLEMONS BEE SUPPLY COMPANY
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Kansas City Mo.

THAGARD'S ITALIAN QUEENS

I am booking orders for April to October deliveries; my queens are bred from imported stock, they are hardy, prolific, gentle, disease-resisting and honey producers. Untested queens \$1.50 each, \$7.50 for six. I guarantee pure mating, safe arrival and perfect satisfaction. Catalog free.

V. R. THAGARD,
Greenville, Ala.



PAT. JULY 30, 1918

C.O. BRUNO NAILING DEVICE

Made for the Huffman Brood Frames. A combined Nailing, Wiring and Wedge Clamping Device. Has been tried and is guaranteed to do accurate work.

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Complete directions for operating are furnished with each device.

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BEE SONGS, 2c EACH

I will mail copy of "Songs of Beedom," having 10 bee songs, for only 20c; 7 Teddy Bear souvenir postal cards for 10c; J. J. Wilder's book, "Southern Bee Culture," 30c; Danzenbaker 3½ in. Bee Smoker, 90c. All postpaid at prices given. Address **GEORGE W. YORK,** 1128 W. Glass Ave., Spokane, Wash.

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CIGARS GUARANTEED

50 Utopia Deka \$4.50
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10c brings a SAMPLE of each

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We handle the finest line of bee supplies. Send for our 68-page catalog. Our prices will interest you.

The Colorado Honey Producers' Association, 1424 Market St., Denver, Colo.

ANNOUNCEMENT

QUALITY QUEENS FOR SPRING DELIVERY

Book your orders now. Head your colonies with the best mothers to be had, and take advantage of high honey prices. Beekeepers who insist on the best queens, reared by the best methods known, will be convinced after a trial order that mine have no superiors. Several years' experience on a large scale. Have perhaps reared more queens in each of the past two years than any other queen-breeder up to the present time.

Buy queens from the man who specializes in queens: First—that you may expect prompt service. Next—that you can depend on getting full value for the price you pay. Because queen work neglected to do something else is sure to show up somewhere, sometime. Last, but not least, know that you get what you order; buy from the man who advertises one strain only from the same yard.

Doolittle's strain of Three-Band Pure Italians have long been recognized as America's standard. Get them here and stock your apiaries with disease resisters, from a location free of disease. They are gentle and do justice in the supers.

Satisfaction and safe arrival guaranteed, or your money back. Prices cash with order are as follows:

	Before July 1.			July 1 to Nov. 1.		
	1	6	12	1	6	12
Untested -----	2.00	\$8.50	\$15.00	\$1.25	\$6.50	\$11.50
Select Untested --	2.25	9.50	18.00	1.50	7.50	13.00
Tested -----	3.00	16.50	30.00	2.00	10.00	18.50
Select Tested ----	3.50	19.50	35.00	2.75	15.00	27.00

No nuclei except to accompany tested or select tested queens. Write for prices.

JENSEN'S APIARIES, PENN., Lowndes Co., Miss.

MONEY FROM HONEY BEEES MAKE HONEY, HONEY MAKES MONEY

ONLY WHEN PROPER EQUIPMENT IS CORRECTLY USED

"LEWIS" BEE SUPPLIES

are accurately constructed and right in quality and price. A post card will bring our catalog.

WRITE DEPT. B

WESTERN HONEY PRODUCERS
SIOUX CITY, IOWA

EARLY QUEENS BY RETURN MAIL IF YOU WANT THE CHEAPEST BUY THE BEST

Weather permitting, I will begin mailing my bright Italian Queens April 1, at the following prices:

Untested, single, \$1.50, six for \$7.50, twelve for \$14. Select tested for breeding, \$4 each.

I will also take orders for 200 two and three-frame nuclei, shipments to begin about April 15 to June 1, at the following prices:

Two-frame, \$4, twenty-five or more, \$3.90 each.

Three-frame, \$5, twenty-five or more, \$4.90 each.

If queens are wanted add kind and price. I guarantee every queen I send out, and your money refunded if not satisfied. I also guarantee safe delivery, free from disease; and quick service. All orders will receive prompt attention and will be filled by return mail, or as soon as possible after receiving your order. Now is the time to send in your orders if you want early queens.

A. B. MARCHANT, Jesup, Ga.

The Correct "Red" Color

has been the chief topic of discussion among "Red" breeders. We have issued a beautiful color reproduction showing a trio of R. I. Reds in the *correct* red shade. This together with "Blue Ribbon Reds"—an authoritative book on mating, judging and exhibiting this popular breed—is free with every 2-year subscription to the R. I. Red Journal—all for 50c. Don't miss this! Send today.

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"Make Hens Lay Winter Eggs" and other practical articles by foremost poultrymen: 80 pages; 6 months, 25 cents; 1 year, 50c; 2 years, 75c; 3 years, \$1.00.
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THE ALUMINUM HONEYCOMB

THE WAY TO GREATER PRODUCTION

We are shipping "MONEYCOMBS" all over the civilized world, their success is tremendous.

The question is not, can you afford them, but how can you do without them? Make your bees be efficient.

Beeswax is the most costly product of the honeybee and since wax for comb building can only be produced at the expense of many times its weight in honey it is well that the ingenuity of man has invented one of the greatest aids to profitable beekeeping—the Aluminum Honeycomb.

With **MONEYCOMB** you can:

1. Produce more honey
2. Extract cleaner, no breakage
3. Control all disease
4. Raise more brood
5. Save loss from melting and destruction by animals and insects

"The Aluminum Comb 'MONEYCOMB' is here to stay; its assistance to beekeepers is invaluable.

"H. B. PARKS, State Apiary Inspector of Texas."

"My honeyflow was so light the bees would not draw out the foundation. I was compelled to use aluminum combs, 'MONEYCOMBS,' for brood rearing, and they proved an unqualified success.

"GEORGE D. SHAFER, Palo Alto, Calif."

"My experience with 'MONEYCOMBS,' the aluminum honeycomb, caused me to rank it with the centrifugal extractor.

"A. Z. ABUSHADY, editor of 'Bee World' and Secretary of Apis Club, Benson, Oxon, England."

"I have conducted exhaustive experiments with 'MONEYCOMB,' the aluminum honeycomb, and can heartily recommend it as the most satisfactory honeycomb I ever used in my long experience of bee raising.

PROF. WILL C. STEINBRUNN,

"Principal of Los Gatos School of Apiculture, San Jose Street, Alameda, Calif."

Our Factory is now fully equipped and your order will be shipped immediately on receipt. Made in Langstroth or Hoffman sizes at 60c per frame, f. o. b., Pasadena. Write for prices on both shallow and Jumbo sizes. Discounts given on large orders.

Booklet "B 1" describing "MONEYCOMBS" mailed on request.

ALUMINUM HONEYCOMB COMPANY

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Chester and Colorado Streets, Pasadena, California

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What if the spring should be a bad one and your spring flow failed? What if at the same time your bees came through the winter in bad condition—short of stores? What if you had to do slow feeding for a week or more? Would you be prepared to meet these conditions, or would you lose several hundreds or thousands of dollars?

Make a wise investment—prepare ahead. Do not wait until experience teaches you. Now is the time to lay in a good supply of FOREHAND FEEDERS. The feeder that will meet these conditions and save you money, time, trouble and bees. Write for full information now.

BEE SUPPLIES

We shall be very glad to send you our catalog listing a complete line of supplies. Our line of bee supplies are of the best material, workmanship and quality. We offer you good service, prompt and fair dealings. We can save you money. Get in your order now before the rush. Write at once for our supply catalog.

BEEES AND QUEENS

You will want your bees and queens early in the spring. Will you be too late to get your order in? We are booking orders fast for spring delivery. It doesn't pay to wait. Get in your order now.

Forehand's Three Bands need no recommendation. For over a quarter of a century they have been pleasing the best beekeepers throughout the world. They are the kind **surpassed by none, but superior to many**. They are thrifty, hardy, gentle and beautiful. Write at once for our special Queen and Bee Circular, giving full description and prices on our bees and queens.

Twenty-seven years of beekeeping enables us to give you goods of the finest quality—the kind that have proven this. Our long experience has taught us to offer only the best goods and the best service to our customers.

W. J. FOREHAND & SONS, The Bee Men

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Bee Keepers' Supply Mfg. Plant.

A BIG STOCK OF BEE SUPPLIES

ALL BOXED, ready to ship at once—thousands of Hoffman Frames; also Jumbo and Shallow Frames

of all kinds—100 and 200 in a box. Big stock of Sections and fine polished Dovetailed Hives and Supers.

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Will take your Beeswax in Trade at Highest Market Price

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Read what J. E. Rarent, of Chariton, N. Y., says: "We cut with one of your Combined Machines last winter 50 chaff hives with 7-in. cap, 100 honey-racks, 500 frames and a great deal of other work. This winter we have a double amount of hives, etc., to make with this saw. It will do all you say of it." Catalog and price list free.



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PACKAGE BEES

Prices f. o. b. here, by express only,

2-lb. pkg. bees, \$4.65; 3-lb. pkg. bees, \$6.65. Queens, untested, \$1.35; tested, \$2.50. Terms, 25 per cent with order, balance 10 days before delivery.

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Albany, Ala.

Established 1885

We are still furnishing beehives made of white pine; they will last. A. I. Root Co.'s make of bee supplies kept in stock. Send for catalog giving full particulars; free for the asking. Beeswax in exchange for supplies, or cash.

JOHN NEBEL & SON SUPPLYCO.
High Hill, Montg. Co., Mo.



CYPRESS by TEST Substitutes by TALK



The PROOF?—Two Letters FROM BEEMEN:

"Our correspondent makes serious complaints against ——— and MAKES A PLEA FOR CYPRESS as a BEEHIVE MATERIAL. We hope you will look into this matter," (Etc.)—and here's another:

"Mr. ———, of ———, just came into the office. He informs us that they tried a car of CYPRESS LUMBER last year for the first time, and are so well pleased with it that they are ORDERING ANOTHER CAR for use in making HIVE BOTTOMS."

Is there value to you in an endurance test of 51 years in greenhouse sash? It is reported to us that sash made of heart Cypress by a prominent greenhouse contractor in Chicago, and placed in position in a greenhouse at Des Plaines, Ill., in 1868, are **Still Doing Service.**

It will serve you as well and save you the nuisance and expense of repairs and replacements. The argument backed by such facts cannot be answered by mere talk. Ask the manufacturer or contractor who wants to give you a "substitute" for Cypress to cite you an endurance test of 30 to 45 years to the credit of the so-called "substitute."

That is no more than a fair precaution on your part—good, ordinary business sense.

Write us for Vol. 1 of the Famous Cypress Pocket Library with Full U. S. Government Report on "The Wood Eternal"

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SERVICE AND QUALITY

**BEE
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Order your supplies early, so as to have everything ready for the honey flow, and save money by taking advantage of the early order cash discount. Send for our catalog—better still, send us a list of your supplies and we will be pleased to quote you.

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The Diamond Match Co.
(APIARY DEPT.)

**MANUFACTURERS OF
Beekeepers' Supplies
CHICO, CAL., U. S. A.**

Dadant's incomparable Foundation is always kept in stock. Western Beekeepers can be supplied advantageously.

BEEKEEPERS, wherever they may be located, before deciding where to obtain supplies, should write to The Diamond Match Co. for prices, and for their Beekeepers' Supply Catalogue.

This Company are the largest manufacturers in the world who make Bee Supplies. They own their own timber lands, mills and factories, and supply goods direct from the tree to the beekeeper.

Full advantage of this low cost of production is given to the purchaser.

The Apiary Department (which is in charge of experienced supply men, who are also practical beekeepers) maintains a constant excellence of product and offers unsurpassed service.

The Diamond Match Co.

Apiary Department

CHICO, CAL., U. S. A.

113,756 POUNDS OF COMB FOUNDATION

On the date this is written, Jan. 2, 1920, our company has a total in orders for the New Root-Weed Comb Foundation of 113,756 lbs. That is a big lot of comb foundation. It will fill six big freight cars full. We never before have had at this season so many and so large orders for comb foundation as we have today.

WHY are the beekeepers from all over the world sending orders for comb foundation in these amounts to this company? The answer can be given in one word—

CONFIDENCE

When we recently announced a new Root-Weed Comb Foundation that we believed would prove to be one of the greatest improvements made in comb-foundation manufacture, the beekeepers of America believed us. They took some account of our 50 years in the manufacture of beekeepers' supplies and our long record in ever trying to improve the beekeepers' appliances and utensils. We appreciate this renewed evidence of their confidence in receiving as they have our promise to give them a better comb foundation.

OUR PROMISE

The new process, we told beekeepers, had to do with both the refining of the wax and the milling of the wax sheets. We promised that this new comb foundation would be a product nearer to that of nature's own than any other manufactured foundation. We today re-affirm that promise.

By the new refining process, we are today getting the best wax we have ever secured, with a true waxy aroma that is lacking in all wax refined by the acid processes.

OUR THANKS

At the head of this page, in large type, we have placed the figures that beekeepers have piled up for our New Root-Weed Comb Foundation. Those figures spell the Confidence of the beekeepers of America in the promises and the products of this company. At the beginning of another year, we wish to thank our great host of beekeeper friends for this confidence.

THE A. I. ROOT COMPANY
MEDINA, OHIO